The development of the Biblical Hebrew vowels

P R O E F S C H R I F T

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van de Rector Magnificus prof. mr. C.J.J.M. Stolker,
volgens het besluit van College voor Promoties
te verdedigen op woensdag 21 september 2016
klokke 16:15 uur

door

Benjamin Derek Suchard

geboren te Toronto
in 1988

Promotores:	Prof. dr. H. Gzella
	Prof. dr. A.M. Lubotsky
Promotiecommissie:	Prof. dr. W.J. van Bekkum (Rijksuniversiteit Groningen)
	Prof. dr. R.H. Bremmer
	Prof. dr. R. D'Alessandro
	Dr. C. Stadel (Ben-Gurion Universiteit van de Negev)
	Dr. M.F.J. Baasten
	Dr. H. Neudecker

דָּבְקָה לֶעָפָר נַפְשִׁי
חַיֵּנִי כִּדְבָרֶךָ׃
דְּרָכַי סִפַּרְתִּי וַתַּעֲנֵנִי
לַמְּדֵנִי חֻקֶּיךָ׃

For my parents.

Contents

Acknowledgements

In this section, the University's doctorate regulations permit me to acknowledge those involved in the genesis of this dissertation "[w]ith the [customary] restraint". Although I am uncustomarily indebted to the people mentioned below, I must therefore ask them to accept my restrained thanks.

First of all, I thank my supervisors, Prof. Holger Gzella and Prof. Alexander Lubotsky, for their constant encouragement and justified criticism. I am grateful for all they taught me in my first five years at Leiden, and working under their supervision for the past four has been a pleasure.

The most time discussing my research was probably spent with my paranymphs, my officemate Paul Noorlander and my dear Hilde Gunnink. I thank them for supporting me during the whole process and for proofreading parts of the manuscript. The same gratitude for proofreading and debating some of my work goes out to Dr. Ahmad Al-Jallad and Dr. Marijn van Putten, and I also thank them for the many hours spent on study- and stoompad-related topics, together with the rest of the LeiCenSAA crew: Fokelien Kootstra, Jouni Harjumäki, Chiara della Puppa, and Phillip Stokes. I also thank all my friends and colleagues at LUCL, especially Peter Alexander Kerkhof, as well as the Management Team and secretarial staff.

Among my former teachers, I especially thank Dr. Martin Baasten, primarily for teaching me Hebrew and subsequently letting me teach Hebrew, and Dr. Maarten Kossmann, for giving me just the right advice at every crucial point in my studies. I also thank Thijs Amersfoort, Annelore Vromans, Johan Lundberg, and Eelco Glas, the first students to be exposed to this work.

Beyond Leiden, I must first express my sincere gratitude to my parents, Derek Suchard and Liesbeth Suchard-de Vries, for their unflagging interest in my studies and pride in my accomplishments. I gladly dedicate this work to them. I am also thankful for all the friends who shared my enthusiasm for what was, for most of them, a very outlandish topic. Special mentions go to Rob Verhoeven, who saved me so much time compiling the database; Benny van Zuiden, who made me pay

attention to typography; and Jurgen de Mooij and Pim Dijkstra, who helped me adjust to working life.

Finally, I would like to thank the Dutch people, whose tax monies made this research possible. I hope the final result will be of interest to some small fraction of their number.

1 Introduction

When the scientific discipline of linguistics originated in the eighteenth century, the subdiscipline of historical linguistics originated with it. Indeed, in the prevailing view of the time, the study of language was necessarily historically oriented (Burridge 2013). While the twentieth century saw a methodological shift towards the synchronic study of language and the birth of general linguistics, historical linguistics as it is practiced today still basically operates on the principles developed by a group of scholars that dominated the last quarter of the nineteenth century, the so-called Neogrammarians (German: *Junggrammatiker*). Their main thesis, known as the Neogrammarian Hypothesis, was that all changes in the pronunciation of words that were not due to language contact or analogy (see below) resulted from *regular, phonetically conditioned sound changes*, or *sound laws*. In their own words:

> When we speak of systematic effect of sound laws we can only mean that given the same sound change within the same dialect every individual case in which the same phonetic conditions are present will be handled the same. Therefore either wherever earlier the same sound stood, also in the later stages the same sound is found or, where a split into different sounds has taken place, then a specific cause – a cause of a purely phonetic nature like the effects of surrounding sounds, accent, syllabic position, etc. – should be provided to account for why in the one case this sound, in the other that one has come into being.[1] (Paul 1880: 69, cited in translation in Hale 2003: 343)

Historical linguists in the twenty-first century still adhere to the Neogrammarian Hypothesis because it has proven to work. The assumption that sound change is purely phonetically conditioned has led to the highly detailed reconstruction of

[1] *Wenn wir daher von konsequenter Wirkung der Lautgesetze reden, so kann das nur heissen, dass bei dem Lautwandel innerhalb desselben Dialektes alle einzelnen Fälle, in denen die gleichen lautlichen Bedingungen vorliegen, gleichmässig behandelt werden. Entweder muss also, wo früher einmal der gleiche Laut bestand, auch auf den späteren Entwicklungsstufen immer der gleiche Laut bleiben, oder, wo eine Spaltung in verschiedene Laute eingetreten ist, da muss eine bestimmte Ursache und zwar eine Ursache rein lautlicher Natur wie Einwirkung umgebender Laute, Akzent, Silbenstellung u. dgl. anzugeben sein, warum in dem einen Falle dieser, in dem andern jener Laut entstanden ist.*

unattested proto-languages. In some cases, features of these reconstructions have later been confirmed by their reflexes in newly-discovered languages. On the other hand, the Neogrammarian promise of regularity has encouraged scholars to take a closer look at seemingly random variation in the reflexes of what should be the same sound, uncovering the subtle rules governing this variation in the process. Thus, the hypothesis that sound changes are phonetically regular seems to match the facts. It gives linguists insight into earlier stages of the languages they study and lets them understand how the attested forms came to be.

While the Neogrammarian paradigm is thus largely followed by most modern historical linguists, scholars of the Semitic languages have been, to a certain extent, "a people dwelling alone, and not counting itself among the nations". Perhaps due to the strong philological tradition in the scholarship of such languages as Arabic, Aramaic, and Hebrew, the field of comparative Semitics tends to be more tolerant of loosely formulated sound laws with unexplained exceptions and allows for non-phonetic factors to condition sound change. In the significantly titled 'Non-phonetic conditioning of sound change and Biblical Hebrew', the eminent Hebrew and Arabic scholar Joshua Blau concludes:

> I have tried to show that sound change is not always strictly phonetically conditioned. I have demonstrated on the strength of biblical material that functionally significant sounds may be preserved in positions in which they are, as a rule, omitted (...), and that phonemes are apt to behave differently from phonetically identical allophones (...). On the other hand, I do not consent to the often expressed opinion that sound changes may be limited to certain grammatical classes to the exclusion of others, without any historical, phonetic, or functional reasons, or analogical formation. I am convinced that accurate analysis of such alleged cases is apt to discover special reasons that led to the restriction of a certain sound change to a special grammatical class. (Blau 1979: 14)

As will be clear, this allowance for the functional conditioning (in Blau's case) of sound change contradicts the Neogrammarian Hypothesis, which only allows for sound changes to be phonetically conditioned. Also note his reference to "the often expressed opinion that sound changes may be limited to certain grammatical classes", which violates the Neogrammarian Hypothesis even further. This contradiction suggests that an investigation into the defensibility of the Neogrammarian Hypothesis from a Semitic point of view may be fruitful. If there is sufficient

evidence for non-phonetic conditioning of sound change, as many Semiticists maintain, this is an important finding for the entire field of historical linguistics. If, on the other hand, the Neogrammarian Hypothesis is as reliable as its continued acceptance among non-Semiticists suggests, a thorough application to the Semitic family may yield interesting new results. It is to this controversy about the conditioning factors of sound change that this work seeks to contribute.

This work aims to determine to what extent the development of the vocalic phonemes from Proto-Northwest-Semitic to Biblical Hebrew can be described by exceptionless sound laws. We may motivate this research question by considering its main constituents. The focus on vowels is simply because the development of the consonants – excepting the glides, *w and *y – is uncontroversial and well understood, the only issue being the absolute chronology of some phonetic changes and mergers; the vocalic system of Biblical Hebrew, however, is quite different from that of older and more archaic forms of Semitic, as will be seen in chapter 2, and its development is debated. The other parts of the question require a lengthier introduction, which will be taken up in the following sections. First, why exceptionless sound laws? Second, why Biblical Hebrew? And third, why Proto-Northwest-Semitic?

1.1 Exceptionless sound laws

As the quote from Paul (1880) above indicates, the Neogrammarian Hypothesis states that sound change within a single speech variety is purely phonetically conditioned. In this section, we will consider why this should be the case, taking some more recent scholarship into account, and examine some sources of apparently irregular sound change.

1.1.1 Regular sound change

The purely phonetic conditioning of sound change follows from the normal process of language acquisition (Paul 1920: 69[2], Hale 2003). Mature speakers possess a phonemic representation of the different lexemes and morphemes present in a language. As these phonemic representations are psychological entities, however,

[2]This is the fifth edition of Paul's *Prinzipien der Lautgeschichte* and the last to appear during the author's lifetime. This edition is cited in the rest of this introduction to present the most developed version of the Neogrammarian view of language change.

they cannot be directly communicated to listeners. Rather, the speaker takes the phonetic representations and derives a set of instructions for their speech organs, which then produce a phonetic signal. The way a given phoneme is articulated can be affected by surrounding phonemes, with articulatory motions starting early and persisting for a while. This effect is known as coarticulation. Other factors also affect the phonetic outcome of a certain phoneme. In rapid speech, coarticulation may increase and speech organs may make smaller movements. Additionally, the speaker may realize the same phoneme differently when speaking in different contexts, while different variant realizations may also alternate within the same context (Guy 2003). Together with chaotic variation in articulation and background noise, these factors result in a virtually infinite range of different phonetic realizations of the same underlying forms and phonemes.

A first language learner is then presented with this greatly varied set of phonetic forms produced by speakers in their environment. To be able to produce intelligible utterances (only taking the phonological aspects into account), the learner needs two things, or rather two groups of things: the phonemic representations belonging to individual morphemes and the rules which tell the speech organs how to pronounce a given phoneme in a given context. By recognizing that different phonetic realizations belong to the same word, the learner may infer the underlying phonemic representations. For example, the observation that [kʰæʔ], [kʰɛətˤ], [kʰætʰ], etc. all refer to the same animal allows the learner to posit a single underlying form for the word, e.g. /kæt/. Observing the same variation in the last sound of a word encountered by the learner as [hæʔ], [hɛətˤ], [hætʰ], etc., leads to the same conclusion: both words end in /t/, the latter being stored as /hæt/. Even when different variant forms are found in different words, the learner may identify them as the same phoneme based on patterns of distribution. Although the first sound in *keep* is usually more palatalized than that in *cat*, the difference in this one sound alone never signals a difference in meaning. Moreover, the same predominance of palatalized realizations occurs in *keel*, *keen*, *key*, etc., allowing the learner to identify the following /i/ as the cause of this difference in pronunciation. Accordingly, all of these words can be stored in the learner's mental lexicon with the same initial phoneme, /k/. At the same time, the learner may make a mental note that /k/ before /i/ is to be pronounced with the tongue slightly further forward than when it occurs before /æ/. In this way, the phonemic representations of the lexicon and the phonetic rules producing a given

phoneme's different allophones are transmitted from generation to generation with remarkable faithfulness, considering the complexity of the process.

Thus, the learner tries to acquire both the phonemes present in the language and the rules governing their phonetic realization. If either of these processes occurs with less than 100% accuracy, the learner-become-speaker will produce a significantly different set of phonetic surface forms than the speakers of the previous generation. It may be that the learner is presented with a skewed sample of realizations of a given phoneme in a certain context. Suppose, for example, that /k/ before /i/ is realized on a scale from non-palatalized [k] to highly palatalized [kʲ] in a certain language variety. One learner coincidentally hears an exceptionally large number of [kʲ] realizations. This learner would then internalize this as the normal realization of /k/ in this position. As a result, the learner will produce more palatalized instances of /k/ before /i/ than speakers of the previous generation. Note that this is merely a phonetic change, with no effect on the underlying phonemic representations. As the change concerns the transformation from phonemic representations into phonetic surface forms, it should affect all instances of the same phoneme in the same environment equally. In other words, this kind of phonetic sound change is phonetically conditioned.

Phonemic change, on the other hand, results from a mistaken identification of the underlying representations, as described by John Ohala (1981). As we have seen, learners normally correct for coarticulation, noise, and other factors which give rise to various variant phonetic realizations of a certain phoneme. Ohala notes two ways this can go wrong, which he terms *hypocorrection* and *hypercorrection*.[3] When hypocorrecting, the learner fails to account for coarticulation and other effects. Using the same example of the articulation of /k/ from the last paragraph, the learner may not notice that the words with a large proportion of [kʲ] realizations all have an /i/ following this sound. Instead of identifying these realizations as allophones of /k/, the learner erroneously encodes them as belonging to a separate phoneme, e.g. /kʲ/. This kind of change is frequently accompanied by the loss of a phonemic distinction which originally conditioned the allophonic variation. Thus, if the previous generation had phonemic representations with /ki/, typically realized as [kʲə] when unstressed, /ka/, typically realized as [kə] when unstressed, and /ku/, also typically realized as [kə] when unstressed, the

[3]Not to be confused with the sociolinguistic processes going by the same names, where speakers incorrectly adjust their production to another language variety or register; for some examples of these kinds of hypo- and hypercorrections in Hebrew and related languages, see Blau (1970).

learner may represent these surface forms as /kʲə/ instead of original /ki/ and /kə/ instead of original /ka/ and /ku/. As this example illustrates, hypocorrection can result in both phonemic split (/k/ splitting into /k/ and /kʲ/) and phonemic merger (/i/, /a/, and /u/ all merging into /ə/). Diachronically, the effects of hypocorrection surface as assimilation, lenition, and other forms of reduction.

While hypocorrection involves a lack of necessary correction in the interpretation of a phonetic signal, hypercorrection is the result of the learner correcting for features when this is not necessary. Certain features of the phonetic signal are ascribed to coarticulation, even though they actually belong to the underlying phoneme. For example, if an underlying sequence of /um/ is usually produced as [um], the learner may falsely interpret the roundedness of the [u] to coarticulation, caused by the following [m]. The learner will then hypercorrect this feature and store the phonemic representation as /im/, resulting in less rounded realizations of this sequence in future. Hypercorrection is thus responsible for the diachronic process of dissimilation.

As with phonetic change, described above, the process of phonemic change ensures its purely phonetic conditioning. The phonological learning mechanism is designed to identify one and the same underlying phoneme based on a large, but not random, variation in phonetic realization; recall the example of [kʰæʔ], [kʰɛət̚], [kʰætʰ], [hæʔ], [hɛət̚], [hætʰ], etc. given above, all of which are normally correctly identified as ending in the same phoneme, /t/. Due to the rules governing phonetic production, the speakers providing the learner with input will produce a similar set of variant realizations for the same phoneme in the same environment, regardless of whether the phoneme occurs in a noun or a verb, whether it expresses a functional contrast or a redundant one. Accordingly, if the learner interprets a set of surface forms as deriving from a different underlying representation than the speakers intended due to hypocorrection or hypercorrection, he or she will apply the same mistaken identification to the relevant phoneme wherever it occurs in the same environment. The phonetic context is the only factor that can condition sound change because it is the only factor that affects the phonetic realization of a given phoneme in a consistent manner.

Thus, both phonetic and phonemic sound change are predicted to be phonetically conditioned and regular, as the Neogrammarian Hypothesis states. The latter does allow, however, for irregular change, provided that this is not the result of 'natural' sound change. Two long recognized causes of apparent exceptions to regular sound laws must be mentioned. The first follows from the limitation that sound

change operate regularly within one speech variety. Naturally, a sound change in one language or dialect need not affect any other language or dialect. If a word is borrowed into a speech variety which has undergone different sound changes than that in which it originates, such a word may seem to violate sound laws. The English word *skirt*, for example, has not undergone the regular English change of *sk > *sh*. This is not due to any irregular operation of sound change, however, but because it is a loanword from Old Norse, which had not participated in this change. Its inherited cognate *shirt* shows that the sound law changing *sk to *sh* did regularly apply in this phonetic environment. Where possible, loanwords will be identified and disregarded in the rest of this work.

The second important cause of apparent exceptions to sound laws is analogy and related phenomena. These will be discussed in some depth in the next section.

1.1.2 Analogy and morphological change

Broadly speaking, *analogy* may refer to any linguistic process where the shape of a word is influenced by the shape of another, semantically related word (Fertig 2013: 12–13). For the sake of clarity, however, the Neogrammarian distinction between *analogy* in the strict sense (also 'proportional analogy', 'four-way analogy') and other processes such as *contamination* and *folk etymology* (see below) will be maintained in this work.

Just as regular sound change is a by-product of normal phonological acquisition, analogy is a side effect of the normal operation of morphological rules (Paul 1920: 106–120). In most, if not all languages, different words may be similar to a certain extent in both form and meaning. Often, the difference in form is associated with the same difference in meaning in a number of words. For example, the relationship between *cat* : *cats*, *dog* : *dogs*, *bee* : *bees*, etc. is the same in each case: when compared to the singular, the plural has an additional *-s* (phonemically /-z/) attached to the end. Based on this regularity, learners can formulate a rule: in order to form a plural noun, take the singular and add *-s*. This saves the learner the trouble of having to separately store every single plural form in the language. Additionally, speakers can use such rules to produce forms they have never heard, as in the famous 'wug test' conducted by Jean Berko (1958): when presented with nonsense words like *wug*, both children and adults consistently produce plural forms like *wugs*. Analogy, then, is the application of such a rule to derive a word that did not previously exist in the language. Applying the English pluralization

rule to *man* regularly gives *mans*; should this form become popular and replace the inherited form, *men*, this would be a case of analogical change. Although such analogical changes rely on the presence of perceived rules in a language, it is customary to represent them as proportions, with a pre-existing example of the rule acting as a model for the new creation. For example, the creation of *mans* may be represented as *dog* (singular) : *dogs* (plural) = *man* (singular) : *mans* (plural).

Analogy is relevant to the study of sound change because it can restore phoneme sequences that are regularly lost. A classic example is that of the loss of *w* in the English sequence *swo*: in *sword*, for instance, the *w* is still spelled, but no longer pronounced. The same sound change must have affected *swore*. That *w* is still pronounced in this word today is because it was analogically restored: *bear* (present) : *bore* (past) = *swear* (present) : *swore* (past). Thus, analogy may create words that seemingly violate sound laws. In order to establish the phonetic conditioning of a certain sound change, one must identify exceptions that are due to analogy, as they cannot reveal anything about the sound law itself.

Unlike sound change, analogy does not operate regularly. While some words may be created anew through the application of a certain morphological rule, other irregular forms may well survive, being stored as separate entries in the mental lexicon. It is not the case, however, that anything goes in analogy. To invoke analogy to explain a certain form that seems to contradict a sound law, it must be shown that the supposed analogical change was, in fact, possible, and preferably not too improbable. This raises the question: what limitations are there on the operation of analogy?

First of all, there is the common distinction between *analogical leveling* and *analogical extension*. The difference concerns the alternation of forms of the same morpheme (*allomorphs*), which can either be given up, i.e. leveled, or extended to new cases (Fertig 2013: 48–51). For an example of leveling, compare Old English *frēosan* 'to freeze', *froren* 'frozen' to the Modern English forms, which show the *z* of *freeze* leveled throughout. A common example of extension is that of the verb *to dive*, which originally had the past tense *dived*, as still in most forms of British English; in American English, however, a pattern of stem alternation has been extended: *ride* (present) : *rode* (past) = *dive* (present) : *dove* (past). It is often maintained that leveling and extension are two separate processes, the former being motivated by speakers' preference for non-alternating morphemes (Fertig 2013: 71–76). This does not seem to be the case, however: leveling is

simply the extension of a non-alternating pattern to previously alternating forms. This is convincingly argued by Garrett (2008), who shows that in the reasonably long attested history of English, leveling of present-tense forms to the past tense only ever took place if an analogical model was available. In the case of *to freeze*, for instance, the leveling may be represented as *cleave* (infinitive) : *cloven* (past participle) = *freeze* (infinitive) : *frozen* (past participle). If alternations such as *cleave* : *cloven* had not existed, leveling would necessarily have been based on another model, e.g. *walk* : *walked* = *freeze* : *freezed*; the *z* from the infinitive could not have been leveled to the past participle while leaving the rest of the stem unchanged. No leveling whatsoever could have taken place if there had been no non-alternating forms to serve as a model. Leveling and extension, then, are just subtypes of one and the same process of analogical change.

The next issue is which forms are likely to be targeted by analogical change. Why is an alternation leveled in some cases, but extended in others? And if it is leveled, what determines which form of the morpheme is replaced and which one survives? Frequency is widely acknowledged as the most important factor, but frequency alone is not enough to explain all the observed workings of analogy. Consequently, many other contributing factors have been suggested, such as optimization or simplification of the grammar or certain universal preferences (Fertig 2013: 102–121). The issue is controversial, but the framework proposed by Joan Bybee (1985) will be adopted in this work for its explanatory power and because it lacks the conceptual problems of some other accounts.

Bybee sees *autonomy* as the most important factor in analogy. A word's autonomy determines the chance that it is stored as a separate entry in the mental lexicon, words with higher autonomy being more firmly entrenched. This is determined by the combination of the word's frequency, (semantic) basicness, and morphophonemic irregularity. 'Frequency' here refers to token frequency, how often the individual word is used, regardless of other, related forms. Basicness is a problematic concept in itself, but for present purposes, we may say that a word or morpheme is more basic if it has a broader distribution. *a* is thus more basic than *b* if *a* may occur in more contexts than *b*. In the English verb *to have*, for instance, the form *have* is more basic than *has*, as the latter may only occur in the present tense third person singular, while the former occurs in all other forms of the present, including the infinitive and imperative. The opposite of basicness in this sense is *markedness*: thus, *has* is more marked than *have*. Unlike some other theories of analogy (e.g. Albright 2008), that of Bybee allows for

local markedness (Tiersma 1982): while a certain form of a paradigm may be the unmarked one in most cases, it may be marked in some paradigms, based on semantics. Thus, the singular forms of nouns is normally unmarked, but in words that refer to objects which normally occurs in pairs or groups, like *legs* or *teeth*, the plural may be the unmarked form, making the singular marked.[4] The third constituent factor of autonomy identified by Bybee, morphophonemic irregularity, seems unnecessary. It is unclear how this would contribute to a word's separate storage in the lexicon. Bybee states that "[i]f a word is so irregular that it cannot be derived from any other related words, even if it is semantically marked, it will have to be autonomous" (p. 58), but the obvious alternative is that an insufficiently autonomous irregular word will be replaced by a newly created analogical form.

Should a speaker want to use an insufficiently autonomous form, then, he or she can create it by applying a morphological rule to a more autonomous form, if this is accessible. Bybee argues (pp. 132–134) that the most productive rules are based on the relationships between medium-frequency words. High-frequency words will likely all be individually stored in the lexicon with high lexical strength, which obscures the morphological relationship within the paradigm. Low-frequency words may not have enough lexical strength to cause the speaker to extend a rule that applies to them. In medium-frequency paradigms, however, the speaker probably has separate mental representations of the various parts of the paradigm (e.g. *walk* and *walked*), but he or she is also aware of the morphological relationship between them (*walked* = *walk* + *ed*). Also, as there are more medium-frequency words than high-frequency words, morphological rules that apply to the former will have a higher type frequency than those that apply to the latter. These patterns are thus more likely to be extended.

In summary, analogy is the creation of a new word by applying morphological rules to an existing word. It is most likely to target words with low autonomy, i.e. low frequency and/or high markedness, as these have the lowest chance of being stored in the mental lexicon. If the analogical creation differs from the earlier form of the word, this results in an analogical change. Analogy can only extend patterns which are already present in the language, and the rules that apply to medium-frequency words are most likely to spread to new paradigms.

[4]Note that all words that maintain an umlauting plural in Modern English belong to this category, which explains their resistance to regular plural formation: besides *teeth*, we find *feet*, *geese*, *mice*, *lice*, *men*, and *women* (Fertig 2013: 109).

This narrowly defined concept of analogy is to be distinguished from other categories of morphological change. Like analogy, these processes involve formal changes prompted by semantic similarity with other words, but they work differently and produce different results. The most important types of non-analogical morphological change are folk etymology and contamination (Fertig 2013: 57–70). Both involve the partial adaptation of a morpheme based on confusion with another word.

Folk etymology occurs when a listener mistakenly identifies an existing morpheme as part of a word that did not originally contain it, often because the adapted word is no longer transparent. Thus, Old English *brȳdguma*, literally 'bride man', should yield Modern English ***bridegum*, but folk etymology replaced the second element with a more familiar word, resulting in *bridegroom*. Few cases of folk etymology have been identified in Hebrew, so this concept will not feature prominently in the rest of this work; one likely example is *ṣalmo̊wɛṯ* 'darkness', originally **ṣalmuṯ* but folk-etymologically influenced by *mo̊wɛṯ* 'death'.

Contamination may be distinguished from folk etymology by its effects. While the latter extends entire morphemes to new contexts, contamination can also merely copy one or more phonemes from a related word. Contamination is especially frequent between words with a strong semantic connection, such as synonyms, like Anglo-French *citezein* 'citizen' from earlier *citeien* through contamination with *denizen*; antonyms, like *covert*, originally just an alternate spelling for *covered* but now with a changed pronunciation due to contamination with *overt*; or words that often occur together, like numerals or pronouns. Whereas folk etymology is probably due to misparsing on the listener's behalf, contamination is caused by speech errors. While the speaker prepares to say a certain word, semantically related words also suggest themselves, and in cases of contamination, influence the produced form. Notably, contamination involves the alteration of a previously existing form, while analogy creates completely new forms. This and other crucial differences between contamination and analogy are listed in table 1.1. Bearing these distinctions in mind will allow us to be more rigorous in the identification of morphological change in the following investigation. Most importantly, analogical change should only be posited if the morphological rule in question is already present in the language, and contamination should only be posited if a contaminating form with a close enough semantic association to the affected word can be found.

Table 1.1: Analogy vs. contamination

Analogy	Contamination
by-product of normal language use	result of speech errors
based on morphological similarity	based on semantic association
needs pre-existing model	does not need model
creates new forms	affects existing forms
creates morphologically regular forms	makes forms more similar

We have now surveyed what have traditionally been considered the most important factors affecting a language's phonological development: regular sound change, borrowing, and analogy and other morphological processes. One issue remains, however: taking all of the above into account, there still seem to be some cases of truly irregular sound change. Some of these were already known to the Neogrammarians while others were discovered by twentieth-century scholarship. Both categories will be discussed in the following section.

1.1.3 Irregular sound change

In many cases, sound changes involving assimilation, dissimilation, metathesis and deletion only affect a few words in a certain language, sometimes only one, although they may also occur as regular sound changes (Paul 1920: 63-66). The metathesis seen in the English change from *bridd* to *bird*, for example, was irregular, as shown by its non-operation in *brim*, *bridge*, *brick*, etc. Especially metathesis, haplology (a subtype of deletion), and dissimilation tend to occur in this haphazard fashion. These are then known as *sporadic* sound changes. Interestingly, these sporadic sound changes only have phonemic effects: no cases of sporadic allophony are known, in which a phoneme acquires a new pronunciation in one particular word. Rather, sporadic assimilation and dissimilation always yield previously existing phonemes, while metathesis and deletion necessarily affect phonemes rather than phonetic realizations. Paul (1920: 67) explains these sporadic sound changes as resulting from speech errors. Like sporadic sound changes, attested speech errors only produce phonologically valid forms, and all types of sporadic sound change occur as speech errors (Wells 1951). We may thus safely attribute

sporadic sound change to errors in production, which are then accepted by new generations of speakers.

A more serious challenge to the Neogrammarian Hypothesis is that of *lexical diffusion*. A review of the literature, some convincing examples, and an attempt to reconcile this process with Neogrammarian sound change are given by William Labov (1981). In brief, lexical diffusion refers to observed instances of a sound change apparently spreading from word to word, unpredictably affecting more and more cases. In the English spoken in Philadelphia, for example, /æ/ has shifted to /eːə/ in a number of phonetically defined categories. The change seems to have 'diffused' beyond its original conditioning, however: while the shift does not normally take place before voiced plosives, leaving words like *sad* unaffected, it does occur in *bad*, *mad*, and *glad*. Similarly arbitrary occurrences of this sound change are found in different parts of the lexicon.

This seems like damning evidence against the purely phonetic conditioning of sound change. Labov goes so far as to state that "we have arrived at a situation where no reasonable person can maintain what might be called the Neogrammarian dogma: that sound change is always gradual, always regular, affecting all words at the same time" (p. 271). As Neogrammarian, purely phonetic conditioned sound change clearly has taken place in very many cases, though, we cannot simply throw out the concept of regular sound change altogether. In reaction to the discovery of lexical diffusion, then, scholars have either classified it as a different kind of sound change, to be distinguished from the regular, Neogrammarian kind, or denied that it is a form of sound change in the first place.

Labov himself chooses the first option. Neogrammarian sound change is phonetically gradual and regular, gradually changing all instances of the same phoneme in a certain environment. Lexical diffusion, on the other hand, is phonetically abrupt and unpredictable, changing one phoneme to another in some words, but not in others. To my knowledge, he does not explain how this irregular sound change comes to affect new cases. Lexical diffusion as a process thus remains unexplained.

Recently, though, Bybee (2013) has shed some new light on the matter. She identifies two separate subtypes of lexical diffusion. Some cases of lexical diffusion affect high-frequency words first, then spread to low-frequency words; in other cases, vice versa. Interestingly, this difference in diffusional direction matches a difference in the phonetic change that is diffused. Changes that spread from high-frequency words to low-frequency words tend to be phonetically gradual

and involve reduction, resulting in less articulatory effort, as in the deletion of word-final /t/ in English. Changes that spread from low-frequency words, however, may also be phonetically abrupt, as in the English change of /θ/ to /f/. According to Bybee, lexical diffusion from high-frequency words is simply what phonetic change ('sound change' in her terms) in action looks like. More frequent words have more progressive phonetic realizations, but eventually, these realizations will regularly spread throughout the lexicon. Lexical diffusion from low-frequency words ('phonological change'), on the other hand, is something else. Observing the similarities with analogical change (also noted by Kiparsky 1995), she states that "change affecting low frequency words first indicates that the form of such words presents a challenge to the listener or learner with the result that such words are remade on more familiar patterns" (p. 225). While this is obviously different from analogy proper, the process is reminiscent of another form of morphological change: folk etymology. Hearing an infrequent word with a /θ/, a learner may mistakenly identify the phoneme as /f/, which is itself more frequent than /θ/. Interestingly, this then decreases the relative frequency of /θ/ to /f/, making future changes of this type more likely. Thus, the change may spread from low-frequency words to more frequent ones, eventually affecting all eligible cases and showing the same results as a regular sound change. Alternatively, a few highly frequent words may resist the change indefinitely or perhaps merge with another phoneme, resulting in apparent counterexamples to a sound law.

Thus, it seems that lexical diffusion does not contradict the Neogrammarian Hypothesis: diffusion from high-frequency words is regular sound change in action, while diffusion from low-frequency words is not a form of sound change at all.

1.1.4 Summary

We have encountered a number of different types of change that may affect the phonetic realizations of a word, some phonological in origin, some morphological. All of these changes result from errors, either errors in production or errors in perception.

Phonetic change results from the incorrect acquisition of phonetic rules governing the production of phonemes. It is phonetically regular, as the acquired rules always affect the same phoneme in the same environment in the same way.

Phonemic change results from the incorrect inference of phonemic forms. It is also phonetically regular, as the learner infers the same underlying forms given

the same phonetic surface forms, and the latter are themselves regularly based on the original phonemic representations.

Analogy results from the incorrect (or rather, novel) application of a previously existing morphological rule. It is irregular and tends to create less frequent, more marked words, based on more frequent, less marked parts of the same paradigm.

When speech errors are caused by interference with a semantically related word, they may result in contamination. If there is no semantic motivation for the speech error, the result is sporadic sound change. The former is more frequent, as the existence of a semantically close word will skew the speech errors in a certain word in one direction, making the two words more similar.

Similarly, the incorrect identification of a more frequent morpheme than the one intended results in folk etymology, while the incorrect identification of a more frequent phoneme than the one intended results in lexical diffusion.[5] If the explanation for the latter given above is correct, it should target less frequent words first.

1.2 Biblical Hebrew

Biblical Hebrew is, unsurprisingly, the Hebrew of the Bible. More specifically, it is the language of the Hebrew Bible (minus the Aramaic sections)[6], largely corresponding to the Christian Old Testament. This consists of the Five Books of Moses or Pentateuch (Genesis, Exodus, Leviticus, Numbers, and Deuteronomy), the Prophets (Joshua, Judges, 1 and 2 Samuel, 1 and 2 Kings, Isaiah, Jeremiah, Ezekiel, and the Twelve Minor Prophets), and the Writings (Psalms, Job, Proverbs, Ruth, Song of Songs, Ecclesiastes, Lamentations, Esther, Daniel, Ezra–Nehemiah and 1 and 2 Chronicles), together known as *tanak̲*, an acronym of the Hebrew names of these three sections (*torå*, *nb̲iʾim*, and *k̲tub̲im*).

One of the reasons Biblical Hebrew is such an interesting object for linguistic research is its composite status. The texts of the Hebrew Bible were composed between the late second and late first millennium BCE in the literary Hebrew of the time (Gzella forthcoming a). Due to the nature of the Hebrew writing system, these texts were originally almost purely consonantal, leaving it to the

[5]This last term is a bit of a misnomer to describe a single instance of this type of change, as it refers to the spread of the process, not its initiation. Perhaps *folk phonology* would be more adequate.

[6]Namely, Jer 10:11, Dan 2:4b–7:28, and Ezra 4:8–6:18, 7:12–26.

reader to insert the correct vowels based on his knowledge of Hebrew. After the death of Hebrew as a spoken language, probably in the second century CE,[7] the correct pronunciation of the canonized texts was no longer evident to readers. Rather, it had to be learned, word for word, verse for verse. The reading of the Hebrew Bible was no longer based on a living language, but on a received tradition (Hebrew: *måsorå* or *måsórɛt̲*); the experts in this tradition are known in English as the *Masoretes*. From the sixth or seventh century onward, the Masoretes began to experiment with written vowel signs, as well as accents to indicate the melody of the recitation, known as cantillation signs (Sáenz-Badillos 1993: 77). Different Masoretic systems of vocalization and accentuation were developed, and eventually, that used in Tiberias, on the Sea of Galilee, became widely accepted. After the tenth century, the text of the Hebrew Bible vocalized according to this system, known as the *Masoretic Text*, came to be used as the authoritative version of the Hebrew Bible throughout the Jewish world. The Masoretic Text, particularly the version preserved in the authoritative eleventh-century CE manuscript known as the Leningrad Codex, is also the version of the Hebrew Bible that has featured most prominently in modern scholarship, and its language, which we may more precisely call Tiberian Biblical Hebrew, is the main subject of investigation in this work.

The Masoretic Text is not the only version of the Hebrew Bible to have been preserved. Although the non-Tiberian vocalizations have fallen into disuse, Biblical fragments using these systems have been recovered. The most important alternative vocalization systems are the Palestinian and Babylonian traditions (Sáenz-Badillos 1993: 86–104). Both distinguish a smaller number of vowels than the Tiberian tradition: the latter has seven different vowel qualities, while the Babylonian tradition has six; the Palestinian vocalization has signs corresponding to seven of the Tiberian vowels, but the fluctuation in their usage suggests the Palestinian reading tradition only had five qualitatively differentiated vowels (Sáenz-Badillos 1993: 88–89). Moreover, the non-Tiberian traditions differ from Tiberian Biblical Hebrew on some morphological points.

An older source of information on Biblical Hebrew is found in Greek and Latin transcriptions and translations of the Hebrew Bible (Sáenz-Badillos 1993: 80–86). Mainly personal and place names are attested in the Septuagint, the oldest Greek

[7] But see Gzella (2015: 226–229), who argues for the complete replacement of Hebrew as a spoken language by Aramaic in the Hellenistic period, citing proponents of both the earlier and the later date.

Bible translation. Different books of the Septuagint were translated by different people at different times, but the oldest layer, the Pentateuch, dates to the third century BCE. Hebrew names also occur in the Vulgate, the Latin Bible version made by Jerome in the fourth century CE, who also left us a collection of notes on the Hebrew language. The most important source, however, is the Second Column (Secunda) of the Hexapla ('sixfold'), a six-column edition of the Bible compiled in the third century CE by Origen. Besides the Hebrew text and a number of Greek translations, the Hexapla contains a transcription of the Hebrew text in Greek letters, providing evidence for the vocalism of common nouns, verbs, pronouns and particles. The textually most reliable Hexaplaric transcriptions are found in a number of fragments from Psalms, a linguistic analysis of which can be found in Brønno (1943).

A rather different version of the Pentateuch alone is preserved by the Samaritans. The Samaritan Pentateuch differs from the Masoretic Text in many minor and some major respects, as far as the consonantal text is concerned. Samaritan Pentateuch manuscripts are typically unvocalized, but the Samaritan reading tradition is still passed on from father to son to this day and has been comprehensively described by Ze'ev Ben-Ḥayyim (1955–1977, 2000). The language it reflects, Samaritan Hebrew, is quite distinct from Jewish Biblical Hebrew, and could therefore provide highly valuable insights into their shared ancestor, presumably spoken Hebrew. The authenticity and reliability of the Samaritan reading tradition, however, is far from certain (Macuch 1969: 86–87). As it clearly reflects secondary, artificial forms in a fair number of cases, we cannot simply take any Samaritan Hebrew data at face value. For this reason, the evidence from the Samaritan reading tradition will play a relatively minor role in the following investigation.

Besides a few cuneiform transcriptions of names, the earlier Hebrew corpus consists of epigraphic material. This ranges from brief texts and the occasional inscription from the monarchic period, starting in the eighth century BCE, to the earliest attested Bible texts found together with original compositions at Qumran and in the greater Dead Sea area (second century BCE to second century CE, Sáenz-Badillos 1993: 130–146). These texts can only tell us little about the vocalism of the language at the time of their composition, but they do contain some relevant evidence.

This investigation will thus be concentrated on Tiberian Biblical Hebrew, relying on other forms of Hebrew to supply additional evidence, where relevant. This raises a crucial question. If the Masoretic Text is vocalized according to a system

that was only developed eight centuries after the death of the Hebrew language, how can we be sure of its authenticity? In the wake of the pioneering work on non-Tiberian forms of Hebrew done by Paul Kahle in the early twentieth century, many scholars were highly suspicious of the Masoretic vocalization. In their view, it did not accurately reflect any authentic stage of Hebrew, but was an artificial creation. This view is to be rejected, for two main reasons. First of all, there is the systematic correspondence between the Tiberian vocalization and that reflected in the Second Column of the Hexapla, which bears witness to a reading tradition that was much closer in time to the last phases of spoken Hebrew. This shows that if the vocalization of Biblical Hebrew is an invention, it cannot be a late one. The authentic character of the Masoretic reading tradition is established beyond doubt, however, by the regular correspondence between Tiberian Biblical Hebrew words and their cognates in other Semitic languages. In the words of Aron Dolgopolsky (1999: 22-23):

> The very fact that there are regular phonetic correspondences between Masoretic Hebrew and the cognate Semitic languages (including those not known to the Masoretes as Ugar[itic], Akk[adian], Old South Arabian, Mehri, etc.) and that the [Masoretic Hebrew] phonology can be accounted for by a series of regular sound changes from proto-Semitic (reconstructed on the basis of other Semitic languages) proves that it cannot be artificial. We may stress after Bergsträsser that if the Masoretes did indeed bring about changes attributed to them by Kahle and some other colleagues, they must have been trained as modern Semitic scholars! If we believe Garbini suggesting that the distinction between [*š*] and [*ś*] is an artificial invention of the Masoretes (. . .), how can we explain the exact correspondence between this Masoretic Hebrew distinction and that found in Eth[iopic] between [*s*] and [*ś*], [Old South Arabian] between [s^2] and [s^1] [*sic*], Mehri and Soqotri between *š/h* and *ś*, as well as that between [*s*] and [*š*] in Arabic? In my opinion, the [Masoretic Hebrew] vocalization and pronunciation are based on living tradition of Hebrew (up to the 2nd century C.E.) with subsequent changes according to the laws of phonetic development of the Aramaic dialect(s) spoken by Jews (3rd through 9th century C.E.). This does not exclude the possibility that at different periods (including that of the Masoretes) there were non-systematic individual changes of certain words based on re-etymologization, on tabuistic, euphemistic grounds (just as in any other language), or substitution of high-style variants of forms (. . .) for those of the neutral style (. . .). . . . But taken all this into account, we can nevertheless agree with G. R. Driver: "Although

> the Masoretic vocalization might sometimes be wrong, internal reasons as well as the analogy to the cognate languages testify to the general faithfulness of the tradition" (...).

This is also the position adopted in this work.

1.3 Proto-Northwest-Semitic

The chronological end point of an investigation into the the development of the Biblical Hebrew vowels thus quite naturally falls at the codification of the Masoretic Text, which gives us the most detailed information on Hebrew vocalism available, based on a reliable tradition. But where to start? As no direct ancestor of Biblical Hebrew is attested in vocalized script, any account of its historical phonology must rely on a reconstructed proto-language. In this work, we will limit ourselves to tracing the development of the Hebrew vowel system from that of Proto-Northwest-Semitic, the unattested, last common ancestor of the Northwest Semitic subfamily, which includes Hebrew.

Perhaps unexpectedly, it is easier to get a clear picture of Proto-Northwest-Semitic than of any later ancestor of Hebrew, as the discussion of the Semitic family tree below will show. This is due to the broad attestation of the various Northwest Semitic languages, including some very early cases like Ugaritic and Amarna Canaanite. Together with closely related languages outside the Northwest Semitic subgroup, most importantly Classical Arabic, these allow us to reconstruct Proto-Northwest-Semitic grammar and lexicon with a fairly high level of confidence. Older ancestors of Hebrew, such as Proto-West-Semitic and Proto-Semitic itself, are harder to reconstruct, partially due to the controversy over the genetic subclassification of the Semitic languages; one might say that Proto-Northwest-Semitic is Hebrew's oldest (relatively) uncontroversial ancestor. At the same time, the reconstructed Proto-Northwest-Semitic vowel system is very close to that of Proto-Semitic, so hardly any interesting developments are left out by limiting the scope of investigation to the Proto-Northwest-Semitic–Biblical Hebrew time frame.

The Northwest Semitic languages, spoken in the Levant and Mesopotamia, form a clearly related subgroup of the Semitic family.[8] A number of their shared features will be discussed in chapter 2. The family consists of three main branches, as

[8] See Gzella (2014) for a more detailed description of the social and cultural context of these languages and their neighbours.

well as some minor languages whose classification is debated. Hebrew belongs to the Canaanite subgroup, together with Phoenician, once spoken in modern-day Lebanon, surrounding areas, and colonies, and its later, Carthaginian stage, known as Punic. The Transjordanian languages, i.e. Moabite, Ammonite, and Edomite, are also usually considered to be Canaanite; the latter two are poorly attested, while there is a long inscription in Moabite, as well as some shorter texts. Additionally, there is the invaluable resource of Amarna Canaanite, the collection of Canaanite linguistic features found in the letters sent to the Egyptian court by Canaanite vassal states in the fourteenth century BCE. These letters are written in Akkadian cuneiform, and at first sight, their language looks like Akkadian with some Canaanite elements incorporated; whether this actually reflects a spoken, mixed Canaano-Akkadian language variety (e.g. Izre'el 2012) or an adaptation of the Akkadian writing system to express spoken Canaanite (e.g. Von Dassow 2004) is a moot point.

The historically most important branch of Northwest Semitic is Aramaic, attested from the tenth century BCE onwards and still spoken today. Originating in Syria, Aramaic gradually replaced Akkadian as the dominant language of Mesopotamia, and for about a millennium after the fifth century BCE, it was used as a lingua franca throughout the Near East. Many different varieties of Aramaic are attested. For present purposes, the most important ones are Old Aramaic, mainly preserved in inscriptions; Imperial Aramaic (sometimes grouped under Old Aramaic), the administrative language of the Achaemenid Empire, mainly preserved in letters and other documents written on papyrus; and later, vocalized dialects like Biblical Aramaic, preserved in the Hebrew Bible, and Classical Syriac, the classical language of Middle-Eastern Christianity. Aramaic was the language that exerted the most influence on Hebrew throughout its history, so we will encounter many Aramaic loanwords, as well as some possible cases of contact-induced change.

Scholars have tried to group every other attested Northwest Semitic language variety with either Canaanite or Aramaic, but the evidence shows that Ugaritic, at least, should be considered a separate branch of the Northwest Semitic family tree (Noorlander 2015). Attested in alphabetic and syllabic cuneiform texts from the thirteenth and twelfth centuries BCE found on the Syrian coast, Ugaritic is the oldest West Semitic language in which running texts have been found, providing an important tool in the reconstruction of Proto-Northwest-Semitic. Besides Canaanite, Aramaic, and Ugaritic, several other Northwest Semitic language varieties have been identified, notably Amorite, attested in Mesopotamian names

from the early second millennium BCE; Samʾalian, attested in several inscriptions from the ninth and eighth centuries BCE and seemingly close to Aramaic, if not actually belonging to that family itself (Noorlander 2012); the language of the ninth or eighth century BCE Deir ʿAlla inscription, which shares innovative features with both Aramaic and Canaanite (Gzella 2013a); and possibly Taymanitic, attested in the mid-first-millennium BCE inscriptions from the oasis town of Tayma (Kootstra 2016).

Understandably, the reconstruction of Proto-Northwest-Semitic is mainly based on these Northwest Semitic languages. A number of other Semitic languages will also be referred to in the following chapters, most notably Akkadian, Classical Arabic, and Classical Ethiopic or Gəʿəz. Akkadian was the first Semitic language to reach Mesopotamia. It is subdivided into Old Akkadian, attested in the third millennium BCE, and various periods of the Assyrian (northern) and Babylonian (southern) dialects, attested from the second millennium BCE until the beginning of the Common Era. Akkadian was written in a syllabic cuneiform script, adopted from the Sumerians. Classical Arabic, written with an alphabetic script derived from that of Aramaic, is much later (starting in the seventh century CE), but phonologically one of the most conservative languages of the Semitic family. The history of Arabic is a hotly debated issue in current scholarship, and it is unclear to what degree Classical Arabic reflects any single authentic language variety, which calls for some caution in the use of Arabic comparative evidence. Besides the classical, literary language, a large variety of Arabic dialects are spoken throughout the Middle East and beyond. Gəʿəz, finally, has a similar status as a classical, literary language, used in the cultural sphere of modern Ethiopia from the fourth century CE onwards. As the Ethiopic writing system developed the ability to express vowels early on, there is some certainty that texts from the Aksumite period (fourth to seventh centuries CE) accurately reflect the phonology of the spoken language of the time, not secondary reading traditions. Modern Semitic languages of Ethiopia and Eritrea, such as Amharic and Tigriña, are not directly descended from Gəʿəz, but closely related.

The genetic classification of these and other Semitic languages is debated. It is clear that the Akkadian dialects and another ancient Mesopotamian language, Eblaitic, were the first to split off from Proto-Semitic; the former are thus classified as East Semitic, all other languages as West Semitic. The issue is the internal structure of West Semitic, the controversy being centered around the position of Arabic. Traditionally, Arabic was grouped together with Ethiosemitic (Gəʿəz and

its close relatives) and the Ancient South Arabian and Modern South Arabian languages of Yemen and Oman, forming a subgroup known as South Semitic. Based on morphological criteria, however, an alternative family tree was put forward by Robert Hetzron (1976). In the modified version recently argued for by Huehnergard & Rubin (2011), it connects Arabic and Ancient South Arabian to Northwest Semitic, forming a group known as Central Semitic. Central Semitic, Ethiosemitic, and Modern South Arabian are then three separate branches of West Semitic. This classification hinges on the supposed Central Semitic innovation of a new imperfect, *yaqṭulu, replacing the inherited form of the imperfect, *yaqaṭṭal, which is still reflected in all non-Central-Semitic branches. While the evidence for the Central Semitic hypothesis is not without its problems (Suchard 2015), this is the classification that will be adopted in this work.

1.4 Some previous approaches to the question

Having thus explored the research question, we will now briefly survey the most influential literature to have previously addressed this problem before moving on to the methodological aspects of the current study. We shall discuss each author's aims, his methodology, and assumptions about the Hebrew language, in order to be able to properly assess his proposed solutions later on.

1.4.1 Brockelmann (1908)

Carl Brockelmann's *Grundriss der vergleichenden Grammatik der semitischen Sprachen* can fairly be considered the foundation of modern comparative Semitic linguistics. Even now, more than a century since its publication, it remains an incredible storehouse of data on all the major Semitic languages that had been studied at the time. While the Semitic languages have been subject to comparative investigation longer than any other family (Blau 2010: 13), Brockelmann decided to apply the relatively new historical–comparative linguistic methodology to the field of Semitics. He states that the aim of his *Grundriss* is to gather and organize the available material, in order "to clear the way for the solution of the many questions that are still unanswered in this area" (p. vi).[9] This orientation towards

[9] *Der Lösung der zahlreichen auf diesem Gebiet noch offenen Fragen den Weg zu bahnen ist der vorliegende Grundriß bestimmt.*

the linguistic methods of the time is felt throughout the work, and references to Indo-European linguistics are frequent.

Together with morphology, the phonology of Proto-Semitic and its daughters is treated in the first volume of the *Grundriss* (the second volume being concerned with syntax and therefore less relevant to the present work). After stressing that he considers Proto-Semitic reconstructions to be nothing more than formulas expressing the correspondences between cognates in the various Semitic languages (pp. 4–5), Brockelmann goes on to list a great number of words and forms, providing sound laws to explain them from his reconstruction of their shared ancestor. Unlike some other scholars, he reconstructs a quite consistently triradical version of Proto-Semitic, rather than allowing for biradical roots, corresponding to various classes of weak verbs in later Semitic.

In Brockelmann's view, Hebrew is essentially a form of Canaanite (p. 8), meaning that it does not crucially differ from related dialects like Phoenician and Moabite. From Hellenistic times onward, however, this Canaanite language faced an ever-growing influence from Aramaic (pp. 9–10), resulting in the increase of non-classical features in late Biblical and post-Biblical texts. Nevertheless, he considers the Masoretic tradition to be "relatively faithful" (*relativ treu*, p. 11), and relies on the Masoretic text as his source for Biblical Hebrew data.

1.4.2 Bergsträsser (1918)

While Brockelmann (1908) was concerned with all the Semitic languages known at the time, Gotthelf Bergsträsser's 1918 *Hebräische Grammatik* was nearly equally influential in the more specific field of Hebrew linguistics. It is strongly based on that of Kautzsch (1909), which is itself the reworked, 28th edition of Wilhelm Gesenius' classic grammar. Bergsträsser (1918) thus represents an old tradition, and this grammar with a pedigree is the standard reference work for many later authors. The methodology is similar to Brockelmann's: Bergsträsser, too, appeals to the new concepts developed by the comparative linguists working on Indo-European (pp. 82ff.)

Bergsträsser does not explicitly state the aims of his grammar, but it seems to be meant as a very historically oriented synchronic grammar of Biblical Hebrew. In contrast to Brockelmann (1908)'s immensely wide scope, the *Hebräische Grammatik* gives a more in-depth treatment of its narrower subject matter, describing all the minutiae of Hebrew grammar. The author offers possible explanations of

most features of the language, although he sometimes concedes that a certain phenomenon cannot be explained satisfactorily (e.g. on p. 144).

Unlike Brockelmann, Bergsträsser believes that the Masoretic vocalization is "very *unreliable*" (*sehr wenig zuverlässig*, p. 24; emphasis in original). It is not the reliable result of a pronunciation handed down from generation to generation, but shows a great amount of Aramaic influence and many secondarily constructed forms. The author occasionally uses this unreliability of the vocalisation to explain some otherwise incomprehensible peculiarity of the text. Another feature of this work that is worth mentioning is its complicated account of the prehistory of the Hebrew stress system (pp. 115–116), which is most relevant to chapter 4 of the present work. As this reconstruction of the stress system is fairly ad hoc, as we shall see, it is to be dismissed.

1.4.3 Bauer & Leander (1922)

Hans Bauer and Pontus Leander's *Historische Grammatik der hebräischen Sprache des Alten Testamentes* was the first real historical grammar of the Hebrew language. From a modern point of view, it is a strangely mixed piece of work. On the one hand, it is, like the works of Brockelmann and Bergsträsser before it, a treasure trove of data, and as the authors aim to take a completely comparative linguistic look at Hebrew (p. iii), it offers the reader some invaluable insights into the language's prehistory. On the other hand, it is quite seriously dated and partially rendered obsolete by its incorporation of Bauer's concept of Hebrew as a mixed language.

According to this theory (explained on pp. 16ff.), the notion that Hebrew can be placed in a neat family tree of Semitic, grouped first with Canaanite, then with the other Northwest Semitic languages, and so on, is absolutely false. The authors argue that Hebrew uniquely shares features not only with Aramaic, Arabic and the other West Semitic languages, but also with Akkadian (pp. 7–8). Based on this fact, they reject the East–West split that is generally posited for the Semitic family tree, preferring a distinction between an 'old' group, consisting of Akkadian and the original layer of Hebrew, and a 'new' group, consisting of everything else. The uniquely mixed status of Hebrew, then, was caused by the intrusion of a 'new' speech layer into the 'old' layer that was more like Akkadian. Thus, the authors explain the seemingly irregular operation of the Canaanite Shift (*ā > *ō, see chapter 3), a feature of the 'old' layer in their view, by assigning any forms

that did not undergo it to the 'new' layer; e.g. *måqom* 'place' < *maqāmum (cf. Classical Arabic *maqāmun*) is from the 'old' layer, while *qåm* 'he stood' < *qāma (cf. Classical Arabic *qāma*) is 'young'. This mixed nature of Hebrew need not surprise us, since it is the result of the 'young'-speaking Israelites partially imposing their language on the 'old'-speaking inhabitants of Canaan after conquering them, in accordance with the history recorded in the Hebrew Bible. In fact, though, there is no real reason to suspect that Hebrew is in any way a mixed language (as was already shown by Bergsträsser 1923), and today, Bauer's theory is rejected by the great majority of scholars.

Apart from this assumption about the origins of the Hebrew language, however, Bauer & Leander (1922) is a very useful work. The grammar is not only based on the biblical text, which the authors consider to be written in the highly mixed dialect of Jerusalem (p. 32), but also refers to Amarna Canaanite, the Transjordanian languages, non-Tiberian vocalizations of Biblical Hebrew, etc. Another interesting feature is the authors' reconstruction of Proto-Semitic, which is quite different from that of Brockelmann, allowing for biradical roots and deriving most verbal forms from the imperative, which the authors see as the most basic form of the verb.

1.4.4 Birkeland (1940)

We have seen that the developments in general linguistics influenced the methodology of various works on Semitics and Hebrew, and as the discipline evolved further, so this influence changed as well. The emergence of the subfield of phonology inspired Harris Birkeland to take a new look at the Hebrew language (p. vii) in his *Akzent und Vokalismus im Althebräischen*. As the title suggests, this work is largely concerned with Hebrew stress and accentuation and their interplay with the development of the vowels. This specialized focus leads the author to some interesting and original ideas, which will be examined in the relevant chapters. Methodologically, Birkeland tends to invoke dialect borrowing as an explanation (e.g. on p. 14), and like Bauer & Leander (1922), he traces some developments back to the influence of the supposed original, non-Canaanite language of the invading Israelites (e.g. on p. 17), although the details of his scenario are different from Bauer's.

1.4.5 Blau (2010)

Most recently, there is the critically well-received *Phonology and Morphology of Biblical Hebrew*, written by the prominent scholar cited above, Joshua Blau. Throughout his career, Blau has published many articles on the historical development of the Hebrew language (see Bibliography), and this translation of an earlier work in Modern Hebrew can be seen as a collection and organization of the ideas he has put forward over the years.

As Blau considers Biblical Hebrew to be "profoundly multilayered" (p. 5), he aims for a "diachronic–comparative approach" (ibid.), making this something of a strongly historically-minded synchronic grammar, similar to Bergsträsser (1918). In another parallel to works of the early twentieth century, Blau starts out with a general introduction to historical linguistics, which in Blau's case is more directly related to the Hebrew data. On the whole, he prefers to draw on the Hebrew Bible itself as his main source (p. 5). Like Birkeland, Blau assigns an important role to the workings of the various stress systems in the period leading up to Biblical Hebrew.

1.5 Assumptions and methodology

It will be clear from the previous section that there is no shortage of literature on the historical phonology of Biblical Hebrew. Nevertheless, a new attempt to describe the development of the Hebrew vowel system may well be fruitful. As we have seen above, the present work differs from most previous monographs on the topic in its assumptions. Most importantly, unless the evidence clearly proves otherwise, the following investigation will assume that:

1. the vocalization of the Masoretic Text reflects an authentic form of Hebrew (contra Bergsträsser 1918);

2. Hebrew is not a mixed language, so sound laws should hold across all parts of the lexicon except for loanwords (contra Bauer & Leander 1922, Birkeland 1940);

3. the changes from Proto-Northwest-Semitic to Hebrew should match one of the types of natural phonological and morphological change identified in section 1.1.1 (contra Blau 2010).

1 and 2 have been convincingly argued by Brønno (1950) and Bergsträsser (1923), respectively, while 3 is the issue at stake. These assumptions are also those of Brockelmann (1908); the main differences with his conclusions are expected to stem from the incorporation of new data from Semitic languages and texts discovered in the past century. While many studies of individual problems of Hebrew vocalism have been published in that time, this will be the first work since Brockelmann to approach the historical development of the Hebrew vowels as a whole under the assumptions given above.

This study will largely depend on a database of the Biblical Hebrew lexicon constructed for this purpose. In this database, every attested part of a paradigm is listed as a separate entry. Each entry consists of a transliteration of the Biblical Hebrew form, a rough translation (mainly used to keep homophones apart), and the most likely Proto-Northwest-Semitic reconstructions, with the dummy root *qṭl* replacing the radicals. This made it easy to retrieve, for example, all second person masculine singular *piʿel* perfect forms (all reconstructed as *qaṭṭilta), all words with an unstressed *a* in the first syllable, all reflexes of *qiṭlum nouns with a plosive second radical, etc. The reconstructions were very preliminary and mainly served to identify morphologically similar forms. For practical reasons, the database was based on the words listed in the 1985 reprint of Ludwig Koehler and Walter Baumgartner's *Lexicon in Veteris Testamenti Libros*, with corrections and addenda (Leiden: Brill). The spelling of some suspect words and etymological information was checked against the more accurate revised version (Koehler & Baumgartner 1994–2001). Unless indicated otherwise, the Biblical Aramaic data are also taken from Koehler & Baumgartner (1994–2001); Syriac from Sokoloff (2009); epigraphic Northwest Semitic from Hoftijzer & Jongeling (1995); Classical Arabic from Lane (1863–1893); Gəʿəz from Leslau (1987); and Akkadian from the Chicago Assyrian Dictionary (CAD).

The methodology, then, is fairly straightforward. The sound changes affecting the Hebrew vowels that have not been uncontroversially described will be treated in separate chapters, with small, related changes sometimes sharing a chapter. After a review of the literature since Brockelmann (1908), occasionally taking relevant literature from the nineteenth century into account, we will see which aspects of the sound change have adequately been explained, and what further investigation is needed. This further investigation will then collect the relevant lexical material from the database, consider how these forms should be reconstructed for Proto-Northwest-Semitic, and attempt to establish a plausible phonetic

conditioning for changes that cannot be shown to result from analogy or other types of change we have seen above.

1.6 Outline and conventions

Before the case studies of individual sound changes commence, chapter 2 discusses the reconstruction of Proto-Northwest-Semitic, gives a concise synchronic overview of Biblical Hebrew, and mentions some general changes from the former to the latter. Chapter 3 covers the Canaanite Shift, *ā > *ō. Chapter 4 discusses the development of the stress system and three associated lengthening processes: tonic, pretonic, and pausal lengthening. Chapter 5 looks at the development of postvocalic *w and *y, both in diphthongs and in triphthongs (i.e. intervocalically). Chapters 6 and 7 consider various changes of stressed *í to *á and unstressed *a to *i, respectively. Chapter 8 deals with the preservation or loss of word-final vowels. The interaction of all of these sound changes with the historical morphology of Hebrew is explored in chapter 9. Chapter 10, finally, presents the general conclusions, including a combined relative chronology of all the discussed sound changes.

The Semitic material will be presented in transcription to make this work more accessible to non-Semiticists. The transcriptions of Biblical Hebrew strictly represent the traditional pronunciation only: silent consonants are not represented, nor are so-called *matres lectionis*, consonants used to indicate the presence of a vowel. When necessary, the consonantal spelling of a word will be given in transliteration, indicated by <angled brackets>. Very occasionally, silent consonants are indicated in transcription, in which case they are written in (parentheses). The transcription and transliteration used are based on that of Lettinga (2012), chosen for its transparency and lack of macrons on vowels, which may incorrectly suggest a phonemic length contrast between vowels that are distinguished by quality, not quantity. Tables 1.2 and 1.3 give the Hebrew graphemes with their transliteration, IPA value in the Tiberian reading tradition (when not silent, in the case of the consonants), and name (in the version given in Lettinga). The phonetic realizations are taken from Khan (2013a).

beṯ, *gímɛl*, *dálɛṯ*, *kaf̄*, *pe*, *táw*, and *šin/śin* all represent two separate Biblical Hebrew phonemes. The difference between these is marked in the Tiberian vocalization by a diacritic dot. For the distribution of the allophones of *wáw*, *yoḏ*,

Table 1.2: The Hebrew consonants and their transcription

letter	transcription	IPA value	name
א	ʾ	[ʔ]	*ʾ́ālɛp̄*
ב	*b* or *b̲*	[b] or [v]	*beṯ*
ג	*g* or *ḡ*	[g] or [ʁ]	*gímɛl*
ד	*d* or *d̲*	[d] or [ð]	*dā́lɛṯ*
ה	*h*	[h]	*he*
ו	*w*	[v], [w]	*wåw*
ז	*z*	[z]	*záyin*
ח	*ḥ*	[ħ]	*ḥeṯ*
ט	*ṭ*	[tˤ]	*ṭeṯ*
י	*y*	[j], [ʝ]	*yod̲*
כ, ך	*k* or *k̲*	[k^{h}] or [χ]	*kap̄*
ל	*l*	[l]	*lā́mɛd̲*
מ, ם	*m*	[m]	*mem*
נ, ן	*n*	[n]	*nun*
ס	*s*	[s]	*sā́mɛk̲*
ע	ʿ	[ʕ]	*ʿáyin*
פ, ף	*p* or *p̄*	[p^{h}] or [f]	*pe*
צ, ץ	*ṣ*	[sˤ]	*ṣā́d̲e*
ק	*q*	[q]	*qop̄*
ר	*r*	[ʁ], [rˤ]	*reš*
ש	*š* or *ś*	[ʃ] or [s]	*šin* or *śin*
ת	*t* or *ṯ*	[t^{h}] or [θ]	*tåw*

Table 1.3: The Tiberian vowel signs and their transcription

vowel sign	transcription	IPA value	name
◌ַ	*a*	[aː] or [a]	*páṯaḥ*
◌ֶ	ɛ	[ɛː] or [ɛ]	*sḡol*
◌ֵ	*e*	[eː]	*ṣere*
◌ִ	*i*	[iː] or [i]	*ḥírɛq*
◌ָ	*å* or	[ɔː] or	*qǻmɛṣ (gåḏol)*
	ɔ	[ɔ] (rarely [ɔː])	or *qǻmɛṣ ḥåṭup̄*
◌ֹ	*o*	[oː]	*ḥólɛm*
◌ֻ, ◌ּ	*u*	[uː] or [u]	*qibbuṣ*, *šúrɛq*
◌ְ	–	– or any of the short vowels above	*šwå*
◌ֲ	*ă*	[a]	*ḥåṭep̄ páṭaḥ*
◌ֱ	*ĕ*	[ɛ]	*ḥåṭep̄ sḡol*
◌ֳ	*ŏ*	[ɔ]	*ḥåṭep̄ qǻmɛṣ*

and *reš*, see Khan (2013a). Although it will be argued in chapter 2 that Biblical Hebrew phonology does make a phonemic distinction in vowel length, length will not be indicated in transcription. It is not consistently indicated in the Tiberian vocalization, so any transcription which marks length necessarily imposes a certain interpretation on the data, which is to be avoided. The qualities of *qǻmɛṣ gåḏol* and *qǻmɛṣ ḥåṭup̄* have merged in Tiberian Hebrew, but they are distinguished in many other reading traditions, and also in Modern Hebrew and the academic pronunciation of Hebrew. As ɔ always goes back to *u and *å always goes back to *a or *ā, it may be useful to indicate the distinction in transcription; since it is based on the non-Tiberian reading traditions, rather than the conjectures of linguists, this seems more acceptable than the indication of vowel length in other cases. *šwå* indicates the absence of a phonemic vowel after a consonant. If this would result in a syllable containing two consonants in the onset, this is usually resolved by the insertion of an epenthetic vowel: [i] before /y/, a short vowel with the quality of the next one before a /ḥ ʿ h ɔ/, and [a] elsewhere. Word stress, which is phonemic in Biblical Hebrew, is indicated with an acute accent when it

does not fall on the ultimate syllable, its default position.[10] Geminated consonants are transcribed by the same consonant twice in a row, as in *rabbim*.

The transcription used for Hebrew is also used for Biblical Aramaic and other varieties of Aramaic vocalized according to the Tiberian system. The consonants of Syriac (and other Northwest Semitic languages) are transcribed with the same symbols, but a macron is used to indicate vowel length, as in *sūryāyē*. The transcription used for Classical Arabic is close to the DIN 31635 standard, with the difference that case endings and nunation are also transcribed in isolation. Gəʿəz is transcribed according to the system used in Tropper (2002). The normal conventions have been followed for the transliteration of Akkadian and Ugaritic; note that Ugaritic <a i u> represent the combination of the consonant /ʾ/ and a vowel.

In all languages, vocalized forms are written in *italics*, as are consonantal roots; phonetic realizations, written in the International Phonetic Alphabet (IPA), are written in [square brackets]; phonemic representations are written /between two forward slashes/; and again, consonantal spellings are written in <angle brackets>. Reconstructed forms are preceded by an *asterisk, but written in Roman type; expected forms that are not attested are preceded by an asterisk and written in italics; expected forms that are contradicted by the actually attested forms are preceded by two asterisks and written in italics. Many sound changes have been formulated as $a > b$ (/ c_d), which stands for 'a becomes b (when preceded by c and followed by d)'. In this formulaic notation, capital letters represent multiple phonemes: *C* stands for any consonant (sometimes specified by superscript text in square brackets), *V* stands for any vowel (also subject to further specification), and *W* stands for *w or *y. *$* represents a syllable boundary and # represents a word boundary. To indicate that two sounds are identical, they are marked by the same subscript number, as in C_1C_1; non-identity of two sounds is indicated by different numbers, as in C_1C_2. Deletion of a sound is represented as a change to zero, written as Ø. Analogical change is marked by >> two angle brackets. See table 1.4 for other abbreviations.

[10]The choice to only mark stress on non-ultimate syllables reflects a dictum of my esteemed teacher Dr. Martin Baasten's, known locally as Baasten's Law: "In Biblical Hebrew, the stress always falls on the ultimate syllable, except when this is not the case."

Table 1.4: Abbreviations

1	first person
2	second person
2Ch	2 Chronicles
3	third person
abs.	absolute state
acc.	accusative
Akk.	Akkadian
Arab.	Classical Arabic
Aram.	Aramaic
BA	Biblical Aramaic
BH	Biblical Hebrew
CAD	Chicago Assyrian Dictionary
cs.	construct state
Dan	Daniel
Deut	Deuteronomy
du.	dual
EA	El Amarna letter (see Knudtzon 1915) *or* Amarna Canaanite
Est	Esther
Ex	Exodus
Ezek	Ezekiel
f.	feminine
Gə.	Gəʿəz
Gen	Genesis
gen.	genitive
indep.	independent
inf.	infinitive construct
IPA	International Phonetic Alphabet
ipf.	imperfect
ipf.cs.	consecutive imperfect
Is	Isaiah
JBA	Jewish Babylonian Aramaic
Jer	Jeremiah
Josh	Joshua

Judg	Judges
KTU	Keilalphabetische Texte aus Ugarit (see Manfred et al. 1995)
Lev	Leviticus
m.	masculine
n.	note
nom.	nominative
Num	Numbers
PNWS	Proto-Northwest-Semitic
pf.	perfect
pl.	plural
PS	Proto-Semitic
PWS	Proto-West-Semitic
Prov	Proverbs
Ps	Psalms
ptc.	participle
Ru	Ruth
Sam	Samuel
sg.	singular
SH	Spoken Hebrew
suff.	suffixed
Syll.	Syllabic
Syr.	Syriac
Ug.	Ugaritic
WS	West Semitic

2 Proto-Northwest-Semitic and Biblical Hebrew

This chapter will present a reconstruction of Proto-Northwest-Semitic (PNWS), give a concise overview of the phonology and morphology of Biblical Hebrew, and discuss some general developments from the former to the latter. The reconstruction of Proto-Northwest-Semitic is largely based on the balanced discussion in Gzella (2011).

2.1 Phonology

For a recent discussion of the concept of the phoneme, particularly relevant to this section, see Dresher (2011).

2.1.1 Consonants

Proto-Northwest-Semitic is reconstructed with the same 29 consonantal phonemes as Proto-Semitic, shown in table 2.1. The IPA value of consonants is indicated where this differs from the transcription used. All consonants may be geminated (i.e. realized as long).[1]

Many of these consonantal phonemes were subject to merger or a change in phonetic realization in earlier stages of Hebrew. Table 2.2 gives each consonant's reconstructed reflex in spoken Hebrew of the early first millennium BCE (SH) and in Biblical Hebrew (BH). – indicates deletion of a consonant in certain contexts.

[1] While a distinction is sometimes made between geminates, i.e. long consonants, and two adjacent instances of the same consonant, this distinction is not reflected by phonetic measurements. Most modern works on phonology do not even mention such a distinction, while Ladefoged & Maddieson (1996: 92) conclude that "[i]t thus seems evident that geminates can be produced with a repeated articulatory movement under some circumstances, but that this is unlikely to be the most common articulatory pattern. Moreover the presence or absence of a second articulatory peak cannot be taken as diagnostic of whether a long closure represents a geminate stop or a sequence of two identical stops."

Table 2.1: Consonantal phonemes of Proto-Northwest-Semitic

	bilabial	interdental	alveolar	palatal	velar	pharyngeal	glottal
plosives							
voiceless	*p		*t		*k		*ʾ [ʔ]
voiced	*b		*d		*g		
ejective			*ṭ [tʼ]		*q [kʼ]		
affricates							
voiceless			*^{t}s [ts]				
voiced			*^{d}z [dz]				
ejective			*^{t}ṣ [tsʼ]				
fricatives							
voiceless		*t̲ [θ]	*s		*ḫ [x]	*ḥ [ħ]	*h
voiced		*d̲ [ð]			*ġ [ɣ]	*ʿ [ʕ]	
ejective		*ṯ̲ [θʼ]					
laterals							
voiceless			*ś [ɬ]				
voiced			*l				
ejective			*ṣ́ [tɬʼ]				
nasals							
voiced	*m		*n				
approximants/trills							
voiced	*w		*r	*y [j]			

Table 2.2: Hebrew reflexes of the Proto-Northwest-Semitic consonants

PNWS	SH	BH
*p	*p	*p* and *p̄*
*b	*b	*b* and *b̲*
*t	*t and –	*t*, *t̲*, and –
*d	*d	*d* and *d̲*
*ṭ	*ṭ	*ṭ*
*k	*k	*k* and *k̲*
*g	*g	*g* and *ḡ*
*q	*q	*q*
*ʾ	*ʾ and –	ʾ and –
*ᵗs	*s	*s*
*s	*š	*š*
*t̲	*š	*š*
*ᵈz	*z	*z*
*d̲	*z	*z*
*ᵗṣ	*ṣ	*ṣ*
*t̲̣	*ṣ	*ṣ*
*ṣ́	*ṣ́ or *ṣ	*ṣ*
*h̲	*h̲	*ḥ*
*ḥ̲	*ḥ̲	*ḥ*
*ġ̣	*ġ̣	ʿ
*ʿ	*ʿ	ʿ
*h	*h and –	*h* and –
*ś	*ś	*ś*
*l	*l	*l*
*r	*r	*r*
*m	*m and –	*m* and –
*n	*n and –	*n* and –
*w	*w and –	*w* and –
*y	*y and –	*y* and –

As may be seen from table 2.2, a large number of mergers resulted in Hebrew sibilants. The original interdental series, *t̲, *d̲, and *ṯ, shifted to an alveolar realization, originally *s, *z, and *ṣ (probably still affricated, merging with original *^{t}ṣ). *s, both from original *s and original *t̲, then shifted further back to a postalveolar *š, while deaffrication of *^{t}s and *^{d}z to *s and *z gave these phonemes their Hebrew values, as well as merging original *^{d}z with original *d̲. In fact, original *s may have been realized as anything between [s] and [ʃ]; both values are attested in foreign transcriptions of early Northwest Semitic languages (Kogan 2011). The change of *^{t}s to *s then limited the realization of original *s to *š. Although it is not indicated in transcription for the sake of consistency, original *^{t}ṣ > *ṣ never lost its affrication in most pronunciation traditions of Hebrew (Steiner 1982), although it did in the Tiberian pronunciation. *ṣ́ also merged into *ṣ, changing its lateral manner of articulation to that of a sibilant affricate. *ś has merged with *s in the Hebrew reading traditions, and some interchange between the two in late texts show that this merger may have already taken place in the Second Temple period, but its largely consistent spelling with <š> rather than <s> shows that it was still distinguished from *s in Spoken Hebrew when the orthography was fixed. The distinction in transcription (*ś* for *ś and *s* for *^{t}s > *s) reflects this orthographic difference.

Although not distinguished in the Hebrew orthography (presumably following Phoenician), evidence from the transcription of Hebrew names in the Septuagint shows that the velar or uvular fricatives *ḫ̲ and *ġ were still contrasted with pharyngeal *ḥ and *ʿ in Hebrew until a relatively late date (Steiner 2005). Around the beginning of the Common Era, however, the velars merged with the pharyngeals, yielding Biblical Hebrew *ḥ* and ʿ, respectively.

In the plosives, fricatives, and affricates, we find a distinction between so-called emphatic and non-emphatic sounds; the emphatic consonants are those conventionally marked by a subscript dot – excluding *ḥ – and *q. Originally ejective, these consonants came to be realized as unaspirated occlusives with velarization or uvularization in Tiberian Hebrew. The non-emphatic plosives, originally voiceless aspirates or voiced, participated in an Aramaic sound change, shifting to fricatives in postvocalic position (except when geminated). This was originally an allophonic change, but it later became phonemic once some of the conditioning vowels were deleted (as in *malakay > *malak̲ē > *malk̲e* ‘kings (construct)’). When this so-called spirantization first affected different Aramaic

dialects, including the one that introduced the change to the pronunciation of Hebrew, is hard to determine (Steiner 2007b).

The other changes from Proto-Northwest-Semitic to Biblical Hebrew all involve loss. *ʾ was lost in pronunciation in most positions, but preserved in spelling, which allowed it to be secondarily reintroduced in many cases. *h and *t were lost in word-final position at different points in time, lengthening the preceding vowel; *h also elided in certain intervocalic contexts and sometimes assimilated to preceding consonants. *n regularly assimilates to any following consonant; it may also have been lost in word-final position, as was *m at an early point in time (only occurring there in the morpheme known as mimation, see below). The development of *w and *y is discussed in chapter 5. Finally, at a late point in the development of Hebrew, geminates in word-final position were simplified, as were geminated *ʾʾ, *ʿʿ, *hh, *ḥḥ and *rr in almost all cases.

2.1.2 Vowels

Like Proto-Semitic, Proto-Northwest-Semitic had three contrastive vowel qualities and a length distinction, resulting in six vocalic phonemes: *a, *ā, *i, *ī, *u, and *ū. While *aw, *ay, *iw, *iy, *uw, and *uy are often referred to as diphthongs (as in this work), they do not seem to have had a different status as such, rather being a normal sequence of a short vowel and a glide.

The synchronic phonology of the Biblical Hebrew vowels is controversial, and which vocalic phonemes are identified depends on whether some other contrasts are judged to be phonemic. As was noted in the Introduction, the Tiberian vocalization has eleven graphemes to indicate what vowel should be read, cf. table 2.3 (ֽ and ֻ are allographs, both indicating *u*). The three *ḥåṭep̄* vowels (*ă*, *ĕ*, and *ŏ*) are sometimes seen as allophones of zero (normally indicated by *šwå*), which is a valid interpretation for *ă*; *ĕ* and *ŏ* must have phonemic status, though, as is shown by minimal pairs like *ʿĕli* ‘pestle’ besides *ʿăli* ‘go up (f.sg.)’ and *ʾŏni* ‘fleet’ besides *ʾăni* ‘I’.

A more thorny issue is whether the length distinction of Proto-Northwest-Semitic is preserved in Biblical Hebrew. The Tiberian vocalization does not consistently mark vowel length, but phonetically, there are minimal pairs like *yirʾu* (spelled <yrʾw>) [jiʁ.ˈʔuː] ‘they (m.) will see’ besides *yirʾu* (usually spelled <yyrʾw>) [jiːʁ.ˈʔuː] ‘they (m.) will fear’ and *ʾoḵlå* [ʔɔχ.ˈlɔː] ‘food’ besides *ʾåḵlå* [ʔɔːχ.ˈlɔː] ‘she ate’; the vowel length is known from medieval documents studied by Geoffrey

Table 2.3: The Tiberian vowel signs and their transcription (reproduced from chapter 1)

vowel sign	transcription	IPA value	name
◌ָ	*a*	[aː] or [a]	*páṯaḥ*
◌ֶ	ɛ	[ɛː] or [ɛ]	*sḡol*
◌ֵ	*e*	[eː]	*ṣere*
◌ִ	*i*	[iː] or [i]	*ḥírɛq*
◌ָ	*å* or	[ɔː] or	*qǻmɛṣ (gåḏol)*
	ɔ	[ɔ] (rarely [ɔː])	or *qǻmɛṣ ḥåṭup̄*
◌ֹ	*o*	[oː]	*ḥólɛm*
◌ֻ, ◌ּ	*u*	[uː] or [u]	*qibbuṣ*, *šúrɛq*
◌ְ	–	– or any of the short vowels above	*šwå*
◌ֲ	*ă*	[a]	*ḥåṭep̄ páṯaḥ*
◌ֱ	ɛ̆	[ɛ]	*ḥåṭep̄ sḡol*
◌ֳ	ɔ̆	[ɔ]	*ḥåṭep̄ qǻmɛṣ*

Khan (1987), among others. Accordingly, Khan posits a phonemic length contrast in his most recent discussion of the topic (2013b), identifying the long vocalic phonemes /ē ī ɔ̄ ō ū/, and, unmarked for length, /a ɛ e i ɔ o u/. By taking complementary distribution of certain sounds into account, however, the number of phonemes may be reduced somewhat.

As will be seen below, the position of the stress is phonemic in Biblical Hebrew. All seven vowel qualities marked by the Tiberian vocalization can occur in stressed position. Blau (2010: 112–113) identifies six separate phonemes in this position based on minimal pairs, one corresponding to every vowel quality excluding ɛ. He does note that this last sound "certainly has separate phonemic value in **final stressed position**" (emphasis in original), but interestingly, *a* cannot occur there. In word-internal, open syllables, ɛ is frequent, while *a* only occurs before gutturals followed by *a*, before *y*, and in the first person singular perfect object suffix, *-áni*, all positions where ɛ does not occur: stressed ɛ and *a* are thus in complementary distribution in open syllables. *a* does seem to be contrasted with ɛ in closed, stressed syllables, as in the near-minimal pair *båḇɛl* [bɔːˈvɛːl] 'Babylon'[2], and *ʾåḇal* [ʔɔːˈvaːl] 'he mourned'. It will be argued below, however, that *a* in this position

[2]While the presence of ɛ in this word is historically due to gemination of the following consonant (see chapter 6), the analogically created locative form *båḇɛ́lå* 'to Babylon' shows that this gemination was no longer phonologically present.

is phonemically short /a/. If this is the case, stressed [ɛː] and [aː] (except in closed syllables, where it reflects /a/) can be analyzed as allophones of one and the same phoneme. For the sake of symmetry, and because this is its most frequent realization, we may represent this phoneme as /ɛ̄/.

While all stressed vowels are realized as long, there is evidence for an underlying length contrast in stressed syllables, too. For prosodic reasons, phonemically stressed syllables are sometimes realized without stress. When this happens, vowels in closed syllables behave in one of two ways. Some vowels are still realized as long, and often receive the secondary stress, indicated by a diacritical mark (*mé̱tɛ̄*). Some cases of *e*, *o*, and *a*, however, behave differently. They do not typically receive secondary stress, and *e* and *o* are replaced by ɛ and ɔ, respectively. A minimal pair occurs in *ben* 'between' and *ben* 'son (construct)', attested non-proclitically in Gen 49:22. Both are realized as [ˈbeːn] when stressed. When proclitic to the following word, however, *ben-* [ˌbeːn] 'between' remains unchanged, while 'son (construct)' changes to *bɛn-* [bɛn]. Not coincidentally, the cases of *e* and *o* that change to ɛ and ɔ when unstressed occur in parallel to *a* in Tiberian Hebrew and short ɛ and ο in the Hexapla, precisely in positions where historically short vowels are considered not to have been lengthened (see chapter 4), predominantly in verbs and construct states; unchanging *e* and *o* are paralleled by Tiberian *å* and Hexaplaric ɳ and ω. The so-called segolates form an exception, as their historically short stem vowels are always synchronically long in Biblical Hebrew; cf. the proclitic form *mɛlɛ̱k-* [ˌmɛː.lɛχ] 'king (construct)'. In closed syllables, however, this interchange would seem to justify a contrast between long and short stressed vowels, with the proviso that phonemically short vowels are realized with length when stressed. We may safely posit /e a o/ in these words, while the existence of short /i ɛ ɔ u/ is less certain.[3]

[3]Seemingly unmotivated *i* occurs in rare forms like *wayyišb* 'and he took captive', where it is historically short, but possibly an allophone of /e/; no cases of short *u* in stressed syllables are known to me. The historically short *å* in *yåm* 'sea' and a few other forms may be an allophone of /a/ before *m*. Short ɛ has the best chance of being phonemic. The nouns it occurs in are not attested in proclitic position, with the exception of *ʾĕmɛ̱t-* in Ps 117:2, where it does not tell us anything about the length of its vowel; these words may thus be analyzed as containing /ɛ̄/. The relative particle *ʾăšɛr* does frequently occur as a proclitic. Given its nature, however, one may think that it lacks phonemic stress altogether and should be analyzed as /ʾašer/; phonemically unstressed /e/ would then be realized as [ɛː] when accented; compare the realization of /kol/ 'all (construct)', normally unaccented *kɔl-* [kʰɔl] or accented *kol* [kʰoːl], but accented *kål* [kʰɔːl] in Ps 35:10 and Prov 19:7, presumably due to the lack of phonemic stress. This leaves three verbal forms with unmotivated ɛ. *wḵibbɛs* 'and he shall wash' and *wḵippɛr* 'and he shall make atonement' only occur as consecutive perfects (see below); for the first word, contrast the regular perfect *kibbes* 'he washed'. While completely ad hoc, the irregular position of the accent in other forms of

The phonemic length contrast is most conspicuous in unstressed syllables. Five long vowels are unambiguously attested in this position: [iː] as in *yirʾu* [jiːʁ.ˈʔuː] 'they (m.) will fear', [eː] as in *yešḇu* [jeːʃ.ˈvuː] 'they (m.) will sit', [ɔː] as in *yåšḇu* [jɔːʃ.ˈvuː] 'they sat', [oː] as in *yošḇim* [joːʃ.ˈviːm] 'sitting (m.pl.)', and [uː] as in *yuḵlu* [juːχ.ˈluː] 'they (m.) will be able'. These vowels also regularly occur in open syllables, e.g. in the singular forms of the words just given (*yirå*, *yešeḇ*, *yåšaḇ*, *yošeḇ*, and *yuḵal*). There are no indications of a complementary distribution shared by any of them, so the phonemic status of the five long vowels identified by Khan seems certain.

Unstressed [aː] only occurs in the irregular *laḏonåy* [laː.ðoː.ˈnɔːj] 'to the Lord' and related forms and before gutturals (i.e. pharyngeal and glottal consonants), as in *haḥérɛḇ* [haː.ˈħɛː.ʁɛv] 'the sword', *yaʿămoḏ* [jaː.ʕa.ˈmoːð] 'he will stand'. Unstressed [ɛː], too, only occurs before gutturals, as in *hɛḥǻrɛḇ* [hɛː.ˈħɔː.ʁɛv] 'the sword (pause)', *yɛʾĕsop̄* [jɛː.ʔɛ.ˈsoːf] 'he will add'. Both unstressed [aː] and [ɛː] can only occur in open syllables, another feature that sets them apart from the phonemically long vowels identified above. While we could analyze these sounds as unstressed realizations of /ē/, the underlying representations of many words become more uniform if we instead consider them to represent /a/ and /e/, which have been lengthened before gutturals.[4] This is supported by the interchange between short [a] in the interrogative proclitic *hă-* when it occurs before non-gutturals, as in *hăśámtå* [ha.ˈsaːm.tʰɔː] 'have you (m.sg.) placed?', spelled with *a* in closed syllables as in *hayḏaʿtɛm* [haj.ðaʕ.ˈtʰɛːm] 'did you (m.pl.) know?', and long [aː] when it occurs before gutturals, as in *haʾeleḵ* [haː.ʔeː.ˈleːχ] 'should I go?'; under this analysis, the morpheme can be represented as /ha-/ in all cases. The unconditioned [aː] in the words like *laḏonåy*, which are mainly used to refer to God, would then be a marginal phoneme which only occurs here; cf.

the consecutive perfect may indicate that this verbal tense was phonemically unstressed; *wḵibbɛs* would then be /wḵebbes/, *wḵippɛr* /wḵepper/. Similarly, we may also speculate that the highly frequent verb *dibbɛr* 'he spoke' was lexically unstressed, /debber/; compare the enclitic nature of the present forms of Greek εἰμί 'to be' and φημί 'to say', as well as the consistent defective spelling of *qāla* 'he said' in the Qurʾān, indicating a lack of stress (M. van Putten, personal communication). Alternatively, these words may contain a marginal phoneme /ɛ/.

[4] I hope to argue for this analysis in more depth elsewhere; briefly, it postulates a rule that realizes /a e o/ as [aː ɛː ɔː] before either a guttural and an epenthetic vowel or a lexical word boundary and a guttural. Cases like *yaʿamḏū*, where the first, lengthened vowel precedes a vowel in a phonetically closed syllable, must then be represented as /yaʿmḏ́ū/ (similar to non-guttural *yiqṭlu* /yeqṭlū́/), with the insertion of an epenthetic [a] between /ʿ/ and /m/ and lengthening of the preceding vowel: /yaʿmḏ́ū/ → yāʿamḏ́ū [jaː.ʕam.ˈðuː].

the emphatic *l* in Classical Arabic *allāhu* 'God', which does not occur anywhere else in the language.

As far as the short unstressed vowels are concerned, a three-way distinction in quality can firmly be established. *i* is contrasted with *a*, as in *yir›ɛ* [jiʁ.ˈʔɛː] 'he will see' besides *yar›ɛ* [jaʁ.ˈʔɛː] 'he will show', and with ɔ, as in *hiḡlu* [hiʁ.ˈluː] 'they took into exile' besides *hɔḡlu* [hɔʁ.ˈluː] 'they were taken into exile'; as is *a* with ɔ, as in *ḥarḇoṯ* [ħaʁ.ˈvoːθ] 'swords (construct)' besides *ḥɔrḇoṯ* [ħɔʁ.ˈvoːθ] 'ruins (construct)'. Minimal pairs between short *i* and ɛ do not occur to my knowledge,[5] nor between short ɔ and *u*; *e* and *o* are always long. The *ḥåṭep̄* vowels, which also show a three-way distinction, are in complementary distribution with these short vowels, as they only occur in open syllables, unlike short *i*, ɛ, *a*, ɔ, and *u*, and they were pronounced with the same length (Khan 1987). This suggests that we should only posit three short vowels, which could be represented as /e/, /a/, and /o/.

/e/ and /o/ seem fitting, as they occupy the middle ground between the various allophones ([i] and [ɛ] for /e/ and [u] and [ɔ] for /o/); moreover, it was argued above that they are realized as [eː] and [oː] in stressed syllables. They also align nicely with Greek transcriptions of earlier stages of Hebrew, like the Second Column of the Hexapla, where /e/ and /o/ are usually rendered by ɛ (Brønno 1943: 284) and ο (p. 367), respectively, even where the Masoretic Text has *i* and *u*. An indication that /e/ was still realized as [e] in a very recent precursor of the Tiberian pronunciation comes from the presence of long *e* in lexicalized forms like *lelohim* 'to God' and *lemor* 'saying:' for expected ***lɛ›ĕlohim* and ***lɛ›ĕmor*; these forms are more easily understood as deriving from *le›elōhīm and *le›emōr than from their synchronically expected forms. The reverse change is visible in the hypercorrect vocalization of ***toḵléhu* 'it will consume him' in Job 20:26 as *t›ɔḵléhu*, which must be understood as a change from *tōḵlḗhū to *to›oḵlḗhū. Also note that when expected ***i* and ***u* are lengthened due to degemination of a following guttural, this often results in *e* and *o*, again indicating a recent pronunciation as [e] and [o].

Broadly speaking, /e/ in closed syllables is realized as [ɛ] next to gutturals, as in *ʿɛzri* 'my help', and in syllables following the lexical stress (or in the phonemically stressed syllable, if this is realized without stress), as in *wayyéšɛḇ* 'and he sat'; as [i] elsewhere, as in *yišmor* 'he will keep'. /o/ in closed syllables is generally realized as [u] before geminates, as in *kullo* 'all of it', and as [ɔ] elsewhere, as in *qɔḏšo*

[5] Blau (2010) does note the opposition between *›ɛl-* [ʔɛl] 'to' and *›el-* [ˌʔeːl] 'God' in Josh 24:19, but the use of *méṯɛḡ* in the second word shows that it contains a long vowel.

Table 2.4: The vocalic phonemes of Tiberian Hebrew

phoneme	allophone	vowel sign
/a/	[aː]	*a*
	[a]	*a* in closed syllables, *ă* in open syllables
/e/	[eː]	*e*
	[i]	*i*
	[ɛ]	ɛ in closed syllables, ɛ̆ in open syllables
/o/	[oː]	*o*
	[u]	*u*
	[ɔ]	ɔ in closed syllables, ɔ̆ in open syllables
/ɛ̄/	[ɛː]	ɛ
	[aː]	*a*
/ē/	[eː]	*e*
/ī/	[iː]	*i*
/ɔ̄/	[ɔː]	*å*
/ō/	[oː]	*o*
/ū/	[uː]	*u*

'his holiness'. The exact conditioning of the allophones of /e/ and /o/ is hard to identify, however, and we do find near-minimal pairs like *šulḥån* [ʃulˈħɔːn] 'table' besides *šɔlḥi* [ʃɔlˈħiː] 'my sending'. Perhaps the different allophones of /e/ and /o/ in closed syllables were in free variation to a certain extent, which is supported by their interchange in some forms, e.g. *hiḡlå* [hiʁˈlɔː] and *hɛḡlå* [hɛʁˈlɔː], both 'he took into exile'. As was noted above, *ă* can always be analyzed as an allophone of zero, i.e. an epenthetic vowel; but if we interpret ɛ̆ and ɔ̆ as allophones of /e/ and /o/, respectively, it seems plausible that at least some cases of *ă* are allophones of /a/.

To recapitulate, we have identified contrasts between six long vowels and at least three short vowels; only long vowels may occur in open, stressed syllables, while short vowels may also occur in closed and/or unstressed syllables. This yields the synchronic analysis of the Tiberian vocalic phonemes given in table 2.4. Note that in open syllables, every Tiberian vowel sign can only represent one phoneme,[6] as *i*, *e*, *u*, and *o* only represent /e/ and /o/ in closed syllables.

[6]With the marginal exception of *qǻmɛṣ*, which represents phonologically long /ɔ̄/ in *bå›ɔ̆niyyå* 'in the ship' and many other cases, but phonetically lengthened /o/ in a few words like *bɔ›ɔ̆niyyå* 'in a ship'.

The development of the Proto-Northwest-Semitic vowel system to that of Biblical Hebrew is the topic of the rest of this work, but some general tendencies and unproblematic developments may already be noted. *ū regularly becomes Biblical Hebrew /ū/; *ī almost always becomes Biblical Hebrew /ī/, and /ɛ̄/ in a few monosyllabic words where it occurs in word-final position; *ā yields Biblical Hebrew /ō/ and /ɔ̄/, a change which is the subject of chapter 3. The remaining long vowel of Biblical Hebrew, /ē/, usually results from the contraction of di- and triphthongs (chapter 5), as do many cases of /ō/ and /ɛ̄/.

The behaviour of the short vowels is more complex. All three short vowels underwent deletion in certain environments, most importantly in unstressed word-final position (some possible counterexamples are discussed in chapter 8). When preserved, *u usually yields Biblical Hebrew /o/ or /ō/. *a and *i were often lengthened in historically open syllables (chapter 4), yielding /ɔ̄/ and /ē/, respectively. In historically closed syllables, the usual reflex of *a is /a/ or /ɛ̄/, while that of *i is /e/ or /ē/; in many cases, however, stressed *i yields /a/ or /ɛ̄/ (chapter 6), while unstressed *a yields /e/ (chapter 7). The fact that all accented vowels are long in Tiberian Hebrew, which is not the case in earlier Greek transcriptions, points to a relatively late sound change which lengthened all short accented vowels.

2.1.3 Phonotactics and stress

For Proto-Northwest-Semitic and its ancestors, the reconstruction of the syllable structures CV̆, CV̄, and CV̆C is uncontroversial. That is to say that every syllable started with a consonant and contained one mora, i.e. a short vowel, or two morae, i.e. a long vowel or a short vowel and a coda consonant. There is some disagreement over whether any other syllable structures were permitted. Most importantly, the question is whether word-initial syllables could begin with two consonants or were also limited to a single consonant in the onset. That at least a few words should be reconstructed with an initial consonant cluster was convincingly shown, in my opinion, by David Testen (1985).

Testen bases his argument on an unusual correspondence between *n* and *r* in the words for ‘son’ and ‘two’. Both of these words have an *n* as their second consonant in most Semitic languages; cf. Biblical Hebrew *ben* ‘son’, *šnáyim* ‘two (m.)’. In both Aramaic and Modern South Arabian, however, we find an *r*: cf. Biblical Aramaic *bar* ‘son’, *tren* ‘two (m.)’, and Mehri *ḥəbrē* ‘son’, *t̲ərō* ‘two’. Moreover, both of these

language groups show the expected *n* in the plural of 'son', cf. Biblical Aramaic *bne* 'sons (construct)', Mehri *ḥəbūn* 'sons'. As Modern South Arabian and Aramaic are not particularly closely related, this shared anomaly must reflect some unusual feature of these words in an earlier stage of Semitic.[7]

These two words also happen to behave unusually in Classical Arabic, although they do have *n* there. They belong to a small group of nouns which start with a consonant cluster, which is resolved by an auxiliary vowel (and ʾ in sentence-initial position) if no other vowel precedes it: cf. *ʾibnun* 'a son', but *wa-bnun* 'and a son', *ʾiṯnāni* 'two (m.)', but *wa-ṯnāni* 'and two (m.)'. Again, the plural 'sons', *banūna*, does not show this unusual behaviour. Testen concludes from this that these words should be reconstructed as *bn- and *ṯn-, and that Aramaic and Modern South Arabian separately underwent a sound change of *#Cn- > *#Cr-: *n was changed to *r when following a word-initial consonant. Phonetically, this can be understood as denasalization of the *n, which is not uncommon in the languages of the world (see Michaud et al. 2012, especially the examples from Gaelic and Breton). The reconstruction with an initial cluster also explains these words' unusual behaviour in Arabic, and as we will see, supporting evidence comes from the lack of pretonic lengthening seen in Hebrew forms like *bni* 'my son' and *šnáyim* 'two (m.)' (chapter 4). As these words must be reconstructed with an initial consonant cluster, CCV(C) can be seen to have been an allowed syllable structure in Proto-West-Semitic and Proto-Northwest-Semitic, at least. The main argument against such a reconstruction is that CCV(C) syllables are not allowed in most attested Semitic languages, which is not very compelling. Assuming that Proto-Semitic and its descendants were natural languages like any other, there is no reason why they could not allow such a cross-linguistically common syllable structure to occur. Hence, we may also reconstruct CCV(C) syllables in other words that show similar behaviour, if not the same shift of *n > *r (as they do not contain *n).

While it is less certain than the existence of word-initial CCV(C) syllables, it may also be the case that in word-final position, CV̄C syllables were permitted, i.e. syllables ending in a long vowel and a consonant. A small number of nouns should be reconstructed with long case vowels in the construct state and before suffixes (see below), like *pū- 'mouth'. In the absolute state, these words may well

[7] The occurrence of the same shift in exactly the same words in Modern South Arabian as in Aramaic makes it extremely unlikely that this is simply a sporadic sound change, as suggested by Elitzur Bar-Asher (2008).

have ended in a long vowel followed by *m (mimation, also discussed below), e.g. *pūm. In Hebrew, these vowels were shortened at a relatively early point in time, so their reconstruction is not very important for the following investigation.

As we have seen, Biblical Hebrew long and short vowels can both occur in open and closed syllables. As in Proto-Northwest-Semitic, every syllable must start with at least one phonological consonant, although /w-/ 'and' is realized as [u] before consonant clusters and bilabials, and word-initial /ʾ/ may not have been pronounced (Joüon & Muraoka 2009: 86). In most cases, if a syllable would otherwise have two consonants in the onset, this is resolved by the insertion of an epenthetic vowel (known as *šwå mobile*) as in *tḏabbru* [tʰa.ðab.ba.ˈʁuː] 'you (m.pl.) will speak'. Word-internal syllables may end in a consonant, while word-finally, two consonants may occur in coda; the second one is then usually a plosive, as in *wayyešt* [vaɟ.ˈɟeːʃtʰ] 'and he drank'. This syllable structure results from the deletion of a word-final short vowel.

The stress system of Proto-Northwest-Semitic is unknown; it will be argued in chapter 4 that Proto-Canaanite and probably Proto-Aramaic regularly stressed the penultimate syllable of every stress-bearing word, but Ugaritic evidences a different stress system, and neither can be shown to be more original. In Biblical Hebrew, stress is phonemic, as can be seen from minimal pairs like *qǻmå* [ˈqɔː.mɔː] 'she stood up' besides *qåmǻ* [qɔː.ˈmɔː] 'standing (f.sg.)', *bǻnu* [ˈbɔː.nuː] 'in us' besides *bånú* [bɔː.ˈnuː] 'they built', etc. The stress usually falls on the ultimate syllable, often on the penultimate, and very rarely on the antepenultimate (as in *håʾóhɛlå* 'into the tent').

Finally, many words in Biblical Hebrew have separate *context* and *pausal* forms. The pausal form occurs *in pausa*, i.e. at the end of an intonational phrase, and is often characterized by the (historical) lengthening of the stressed vowel. This may be accompanied by a stress shift. Both phenomena are discussed in chapter 4. As a word's pausal form is not predictable from its context form, nor the other way around, lexically separate pausal forms must be assumed, rather than positing a synchronic phonological process of pausal lengthening.

Table 2.5: Independent personal pronouns

person	PNWS	BH
3m.sg.	*hūʾa	*hu*
3f.sg.	*hīʾa	*hi*
2m.sg.	*ʾanta(h)	*ʾattå*
2f.sg.	*ʾanti	*ʾatt*
1sg.	*ʾana(h), *ʾanāku	*ʾănî, ʾånoḵi*
3m.pl.	*hum	*hem, hémmå*
3f.pl.	*hin	*hénnå*
2m.pl.	*ʾantum	*ʾattɛm*
2f.pl.	*ʾantin	*ʾatten, ʾatténå*
1pl.	*naḥnu or *naḥnā	*ʾănáḥnu, náḥnu*

2.2 Morphology

2.2.1 Pronouns

Personal pronouns

In both Proto-Northwest-Semitic and Biblical Hebrew, personal pronouns occur in three persons, two genders (masculine and feminine), and two or three numbers (singular, plural, and in Proto-Northwest-Semitic, dual). Personal pronouns can be either independent, i.e. used as words in their own right, or suffixed to nouns, verbs, or particles. Table 2.5 presents the reconstruction of the Proto-Northwest-Semitic independent personal pronouns that will be arrived at in chapter 8 and their Biblical Hebrew reflexes. According to the Semiticist convention, the third person is presented first. As the dual pronouns have been lost in most languages, they are hard to reconstruct and left out of the table. There is no difference in meaning between *ʾănî*, more frequent in younger texts, and *ʾånoḵi*, more frequent in older texts. The second person feminine plural pronoun is textually uncertain. *náḥnu* is a rare byform of *ʾănáḥnu*, a more innovative form which has almost completely replaced the former. In the third person singular only, separate oblique (non-nominative) forms of the independent pronouns can be reconstructed for Proto-Northwest-Semitic, which are formed with an additional suffix *-(V)tV; these are not preserved in Hebrew.

Table 2.6: Pronominal suffixes

person	PNWS	BH
3m.sg.	*-hu	*-o*, *-hu*, *-w*
3f.sg.	*-hā	*-åh*, *-hå*, *-å*
2m.sg.	*-ka	*-k̲å*
2f.sg.	*-ki	*-k̲*, *-k̲i*
1sg.	*-ī, *-ya (on nouns), *-nī (on verbs)	*-i*, *-ay*, *-ni*
3m.pl.	*-hum	*-m*, *-hɛm*, *-mo*
3f.pl.	*-hin	*-n*, *-hɛn*
2m.pl.	*-kum	*-k̲ɛm*
2f.pl.	*-kin	*-k̲ɛn*
1pl.	*-nā	*-nu*

Independent personal pronouns are mainly (though not exclusively, and not obligatorily) used to express the subject of a sentence. For other syntactic roles, pronominal suffixes are used. On nouns, these suffixes indicate possession; on verbs, they indicate the direct or indirect object; and they may also combine with prepositions and other particles. In Proto-Northwest-Semitic, the nominal and verbal suffixes are identical in all persons but the first person singular; in Biblical Hebrew, a number of different forms have developed, based on the phonological shape of their host. An overview of the pronominal suffixes is given in table 2.6; in the case of Biblical Hebrew, suffixes starting with a consonant may be preceded by a linking vowel, which is not given. The Proto-Northwest-Semitic distribution of the first person singular suffixes *-ī and *-ya is uncertain; presumably, *-ya occurred after long vowels, diphthongs, and the genitive ending *-i-, while *ī replaced the nominative and possibly accusative singular endings, as in *yadā-ya ‘my hands’ (nominative), *yaday-ya ‘idem’ (genitive/accusative), *yadi-ya ‘my hand’ (genitive), but *yad-ī ‘idem’ (nominative).

Demonstrative and relative pronouns

Some singular demonstrative pronouns of near deixis can be reconstructed for Proto-Northwest-Semitic with security and are given in table 2.7. In Biblical Hebrew, the reflex of the masculine genitive, *zɛ*, is used in all syntactic roles. *zu*

Table 2.7: Proto-Northwest-Semitic singular near demonstrative pronouns

case	masculine	feminine
nominative	*ḏū	*ḏātu
genitive	*ḏī	*ḏāti
accusative	*ḏā	*ḏāta

and *zo*, reflecting the old nominative and accusative, are also rarely preserved. All cases of the feminine have merged into *zoṯ*. The reconstruction of the plural is uncertain; probably, it should be something like *›Vll-, reflected in Biblical Hebrew as *›éllɛ*. The demonstratives behave like adjectives (see below) and are occasionally used as relative pronouns. For far deixis, the third person independent personal pronouns are used.

Besides these inherited, Proto-Northwest-Semitic features, Biblical Hebrew also has a definite article, *ha-*, which geminates following non-guttural consonants, as in *habbáyiṯ* 'the house', *hammélɛḵ* 'the king', etc. Its etymology is uncertain; some recent studies have derived it from a demonstrative pronoun (Rubin 2005) or a presentative particle (Pat-El 2009). The relativizing function of the Proto-Northwest-Semitic pronoun *ḏū has been taken over by the particle *›ăšɛr*, grammaticalized from a noun *›aṯarum 'place'. In non-standard texts, the alternate form *šɛ-* occurs, which is probably an even more reduced form of *›ăšɛr* (Huehnergard 2006).

Interrogative pronouns

The interrogative pronouns do not distinguish gender or number, but there is an animacy distinction. Biblical Hebrew has *mi* 'who' and *må* 'what'; the latter usually occurs as *ma-*, with gemination of the following consonant. *mi* has a cognate in Ugaritic <my>, but not in Aramaic; if it is Proto-Northwest-Semitic, the most likely reconstruction is *mīya. *må* is variously reconstructed as *mā and *mah; in chapter 3, it will be argued that the latter reconstruction is correct. A Proto-Northwest-Semitic interrogative adjective *›ayy- 'which' is also reconstructible, but does not survive as an independent word in Biblical Hebrew.

2.2.2 Nouns and adjectives

As in most Semitic languages, nouns in Proto-Northwest-Semitic and Biblical Hebrew consist of a *root* and a *pattern*. The root consists of a number of consonants, usually three, and contributes a large part of the word's lexical meaning. The root consonants are also referred to as *radicals*. The pattern, on the other hand, consists of vowels and, in some cases, affixes or suprasegmental features like gemination of one of the radicals. For example, Biblical Hebrew *mélɛ̱k* 'king', *malkå* 'queen', and *mamlå̱kå* 'kingdom, kingship' are all combinations of the root *mlk*, indicating 'something to do with reigning', and different nominal patterns. Various verbal forms can be formed from the same root, e.g. *målaḵ* 'he reigned', *yimloḵ* 'he will reign', etc. In order to abstractly discuss patterns, we will use the dummy root *qṭl*: accordingly, *mélɛ̱k* can be said to be a *qéṭɛl* noun, *malkå* a *qaṭlå* noun, and *mamlå̱kå* a *maqṭålå* noun. Nouns are inflected for gender, number, case (only in Proto-Northwest-Semitic), and state.

Gender

Like the pronouns, nouns come in two genders, masculine and feminine. Both animate and inanimate nouns occur in each gender. The masculine is the unmarked gender: masculine nouns, like *ʾå̱b* 'father', *kélɛ̱b* 'dog', or *báyi̱t* 'house', are not overtly marked as masculine. Feminine nouns may be marked by the suffix *-å* < *-at- or *-t̲* < *-t-, like *ʾåmå* 'handmaid', *délɛ̱t* 'door', or lack overt gender marking, like *ʾem* 'mother', *ʾérɛṣ* 'land'.

Adjectives, which are formally very similar to nouns, differ in that feminine adjectives are always marked by a feminine suffix, like *ṭo̱bå* 'good (f.sg.)' besides the masculine *ṭo̱b*. Since adjectives agree with their governing noun in gender, feminine nouns without overt gender marking can be identified as such by the feminine adjective they govern, as in *ʾem ṭo̱bå* 'a good mother' vs. masculine *ʾå̱b ṭo̱b* 'a good father'.

Number

Proto-Northwest-Semitic nouns could occur in the singular, the dual, or the plural. The number was marked by an ending, which also indicated the word's case. In many feminine and a few masculine words, a plural suffix *-āt- occurred between the stem and the ending; if the singular contained either of the feminine suffixes,

*-at- or *-t-, these were replaced by *-āt-. The masculine endings could also occur on feminine nouns, which were still treated as feminine as far as agreement is concerned. The Proto-Northwest-Semitic forms of the nominal endings will be discussed below.

In Biblical Hebrew, only the contrast between singular and plural is maintained. The masculine plural endings are *-im* (absolute) and *-e* (construct); the feminine plural has *-o̲t* in both states (see below). A number of nouns referring to objects that usually occur in pairs have maintained the historical dual absolute ending *-áyim*, but they take plural agreement and can also refer to more than two of something, e.g. *šeš knåp̄áyim* 'six wings'.

While the plural is predominantly marked by the ending, some words also change their stem in the plural. Most importantly, the very frequent Proto-Northwest-Semitic *qaṭl-, *qiṭl- and *quṭl- nouns (the so-called segolates) insert an *a between the second and third radical in the plural stem. In Biblical Hebrew, the singulars are reflected by *qɛ́ṭɛl*, *qéṭɛl*, and *qóṭɛl*,[8] while the a-insertion in the plural results in absolute forms like *qṭålim* and construct forms like *qaṭle*, *qiṭle*, and *qɔṭle*, with spirantization of a non-emphatic plosive third radical, as in *mlåk̲im* 'kings (absolute)', *malk̲e* 'kings (construct)' (contrast the presence of *k* in the suffixed singular, like *malki* 'my king'). The same process takes place in the feminine counterparts of these nouns, of the *qaṭlat-, *qiṭlat-, and *quṭlat- patterns, Biblical Hebrew *qaṭlå*, *qiṭlå*, and *qɔṭlå*. Some other nouns also have a different stem in the plural; notable examples are *ben* 'son', plural *bånim* 'sons', and *yom* 'day', plural *yåmim* 'days'. Finally, a few words have a completely different stem in the plural, like *nåšim* 'women' (PNWS stem *nas-), associated with *ʾišša* 'woman' (PNWS stem *ʾint̲-).

Case

In Proto-Northwest-Semitic, nouns and adjectives could occur in one of three cases: the nominative, used for the subject and the nominal predicate; the genitive, used in a construct chain (see 'State' below) and after prepositions; and the accusative, used for verbal objects and adverbial phrases. Case was marked by endings following the stem and the feminine suffix, when present. In the singular, the nominative was marked by *-u-, the genitive by *-i-, and the accusative by *-a-. The dual and the plural only made a distinction between nominative and oblique

[8] In words with a guttural second or third radical, *qáṭal*, *qɛ́ṭal*, *qéṭal*, and *qóṭal*.

(genitive/accusative), the endings being *-ā- (nominative) and *-ay- (oblique) in the dual, *-ū- (nominative) and *-ī- (oblique) in the masculine plural, and *-u- and *-i- in the feminine plural. In Biblical Hebrew, the reflex of the genitive or oblique form is used in all environments and case is no longer marked. The Proto-Northwest-Semitic locative ending *-ah, attached to the nominal stem, is preserved in Biblical Hebrew as the so-called *he locale*, resulting in forms like *baytah > *báytå* 'in a house'.

State

In both Proto-Northwest-Semitic and Biblical Hebrew, nouns and adjectives can occur in two *states*, the *absolute state* and the *construct state*. The absolute state is the normal form of the word. In Proto-Northwest-Semitic, it was marked by a morpheme *-m in the singular and feminine plural and *-na (or *-ni) in the dual and masculine plural, following the case ending; these morphemes are known as *mimation* and *nunation*, respectively, from the names of the Arabic letters *m* and *n*. The construct state is used to indicate that the noun's referent is possessed by that of the following noun; the combination of such a possessed noun in the construct state and its possessor is known as a construct chain. In Proto-Northwest-Semitic, the construct state was marked by the lack of mimation or nunation.

In Hebrew, mimation has been lost in the singular and feminine plural absolute state. As nouns in the construct state formed a prosodic unit with the following word, however, the lack of stress on the word in the construct state has often resulted in a different vocalization, as in *dåḇår* 'word (absolute)' besides *dḇar* 'word (construct)'. In feminine words marked by *-å* < *-at-, the suffix becomes *-aṯ* in the construct state, as in *malkaṯ* 'queen (construct)'. In the masculine plural, mimation has replaced the original nunation of the absolute state, while the construct state is marked by what appears to be the original dual construct state ending, as in *mlåḵim* 'kings (absolute)', *malḵe* 'kings (construct)'.

The different nominal endings in Proto-Northwest-Semitic, as well as the *-a- insertion in the plural of *qVṭl- nouns, are illustrated by *kalbum 'dog' and *kalbatum 'bitch' in table 2.8.

Table 2.8: Proto-Northwest-Semitic nominal declension

number/case	'dog(s)' (m.)	'bitch(es)' (f.)
singular		
nominative	*kalbu(m)	*kalbatu(m)
genitive	*kalbi(m)	*kalbati(m)
accusative	*kalba(m)	*kalbata(m)
dual		
nominative	*kalbā(na)	*kalbatā(na)
genitive/accusative	*kalbay(na)	*kalbatay(na)
plural		
nominative	*kalabū(na)	*kalabātu(m)
genitive/accusative	*kalabī(na)	*kalabāti(m)

2.2.3 Numerals

In Biblical Hebrew, cardinal numerals precede the counted noun. Morphologically, they are similar to adjectives, with the difference that the numbers from 3–10 show gender marking that is opposite to that of the counted noun: numerals counting feminine words are unmarked, while numerals counting masculine words are marked with a reflex of the feminine suffix *-(a)t-. This is not the case for 1 or 2. The numeral 2 is inflected as a dual. An overview of the cardinal numerals from 1–10 in Biblical Hebrew and their reconstructions in Proto-Northwest-Semitic is given in table 2.9.

Ordinal numerals, which all end in the adjectivizing suffix -*i* < *-īyum, behave like regular adjectives.

2.2.4 Verbs

Tense, mood

The Proto-Northwest-Semitic verb distinguished several tenses and moods. In this section, they will be cited in the third person masculine singular, except for the imperative (which only occurs in the second person).

The *prefix conjugation* is a collection of three or four separate tenses that form the core of the inherited Semitic verbal system. All three use the same prefixes (and some suffixes) which mark them for person, gender and number.

Table 2.9: Cardinal numerals 1–10

meaning	masculine		feminine	
	PNWS	BH	PNWS	BH
1	*ʾaḥḥadum	*ʾɛḥåḏ*	*ʾaḥḥattum	*ʾaḥaṯ*
2	*t̲nāna	*šnáyim*	*t̲intāna	*štáyim*
3	*t̲alāṯatum	*šlošå*	*t̲alāṯum	*šåloš*
4	*ʾarbaʿatum	*ʾarbåʿå*	*ʾarbaʿum	*ʾarbaʿ*
5	*ḫamisatum	*ḫămiššå*	*ḫamisum	*ḫåmeš*
6	*siṯ̲ṯatum	*šiššå*	*siṯ̲ṯum	*šeš*
7	*sabʿatum	*šiḇʿå*	*sabʿum	*šɛ́ḇaʿ*
8	*t̲amāniyatum	*šmonå*	*t̲amāniyum	*šmonɛ*
9	*tisʿatum	*tišʿå*	*tisʿum	*téša*ʿ
10	*ʿaśaratum	*ʿăśårå*	*ʿaśrum	*ʿɛ́śɛr*

The *preterite, jussive,* or *short imperfect* consisted of a bare verbal stem with personal affixes. It was used to express past events (with perfective aspect), wishes, and third person commands. Example: *ya-qṭul 'he killed'[9] or 'may he kill', 'let him kill'. In the fientive G-stem (see below), the stem of the prefix conjugations was shaped like *-qṭul- or *-qṭil-, while the stative G-stem prefix conjugation stem was shaped like *-qṭal-.

The *(long) imperfect* consisted of the same stem with the same prefixes, as well as a suffix *-u, if no other suffixes were present. If other vocalic suffixes *were* present, an additional *-na was added that is absent in the preterite and the subjunctive. The long imperfect was used to express nonpast events or past events that occurred iteratively or habitually (i.e. with imperfective aspect), e.g. *ya-qṭul-u 'he kills', 'he is killing', 'he will kill', 'he would always kill', 'he kept killing', etc.; plural *ya-qṭul-ū-na, with the added *-na as compared to the preterite and subjunctive plural, *ya-qṭul-ū.

The *subjunctive* was similar to the preterite, but was marked by *-a if no other suffixes followed. It is used to indicate wishes or the intended result of another action, e.g. *yaqṭul-a 'may he kill', 'let him kill' or 'in order to kill', 'so that he kill'. The difference with the volitive use of the jussive is not very clear.

[9] As the root *qṭl* means 'to kill' in Aramaic, we will translate it as such to exemplify the meaning of the various verbal forms.

The *energic* has left few traces in attested languages; based on forms in Arabic and Ugaritic, it is reconstructed as a form of the prefix conjugation with an *-n- suffix of controversial vocalization. It may originally have expressed some modal nuance, or perhaps a future tense.

The *suffix conjugation* or *perfect* consisted of a different stem than the prefix conjugation and exclusively marked its subject through suffixes. When used with stative verbs (see below), it expressed a state, which was unmarked for tense, e.g. *kabid-a 'he is/was/will be heavy'. When used with fientive verbs, it indicated a past event, probably with perfect aspect, e.g. *qaṭal-a 'he has killed', 'he had killed'. In both cases, then, the perfect expressed a state, which may or may not have resulted from an earlier event.

The *imperative* was used to express commands. It took the shape of the second person jussive without the prefix, e.g. *qṭul 'kill (m.sg.)' (cf. the jussive *ta-qṭul 'you (m.sg.) killed', 'may you kill'). For this reason, the imperative will be referred to as one of the prefix conjugations, where relevant, even though no prefixes are present. Opponents of the reconstruction of word-initial consonant clusters in Proto-Northwest-Semitic prefer to reconstruct the imperative with a short vowel between the first two radicals, e.g. *quṭul, *kabad or *kibad.

Reflexes of multiple *infinitive* formations are attested. The most common ones (for the G-stem, see below) were probably *qaṭālum, *qiṭlum, and *qiṭlatum, all meaning 'to kill'.

Finally, there were *active* and *passive participles*. The active G-stem participle (see below) was formed like *qāṭilum 'killing (m.sg.)'. Attested passive G-stem participles reflect *qaṭīlum or *qaṭūlum, both 'killed (m.sg.)'; both forms were probably present in Proto-Northwest-Semitic. The participles were unmarked for tense and aspect and largely behaved like regular adjectives.

In Biblical Hebrew, the usage of some of these tenses and moods has changed, and some moods have merged. Although still distinct in some forms of the verb, the jussive and the imperfect have generally merged, both being formed like *yi-qṭol* in the singular, *yi-qṭl-u* in the plural; plural and second person feminine imperfect forms like *yi-qṭl-u-n*, which preserve the original long imperfect ending, also occur. The imperfect is used for imperfective events and to express modality, but is no longer used to express progressive action (except in the oldest poetic texts); this is now done by a combination of the subject with an active participle, as in *hu qoṭel* 'he is killing'. The subjunctive has been lost, although it may be the origin of a new volitive or cohortative mood exclusively occurring in the first person,

formed like *ʾɛ-qṭl-å* 'I want to kill', *ni-qṭl-å* 'let us kill'. The preterite use of the short imperfect *ya-qṭul has been preserved in a new tense, the *consecutive imperfect*. This is formed by prefixing the jussive with *wa-*, generally seen as a byform of *w-* 'and', and geminating the prefix consonant, as in *way-yi-qṭol* 'and (then) he killed'. The consecutive imperfect is the unmarked form to express perfective events in narratives. The energic is not retained as a separate mood, but it has left traces in object suffixes on the prefix conjugation containing a not otherwise occurring *n*.

The perfect, now shaped like *qåṭal* or *kåb̲eḏ*, still expresses anteriority and states, but it also sometimes used to express past events regardless of aspect. Normally, this use occurs when another element of the sentence is focalized; the perfect then expresses a backgrounded verb. Mirroring the opposition between (generally) nonpast imperfect *yi-qṭol* 'he kills', 'he will kill' and past consecutive imperfect *way-yi-qṭol* 'and he killed', the perfect is opposed to the *consecutive perfect*, expressing a subsequent future action or purpose, like *w-qåṭal* 'and he will kill', 'so that he kill'. In most verbs, there is a difference in stress between the second person masculine and first person singular perfect, like *qåṭál-tå* 'you (m.sg.) killed', and consecutive perfect, like *w-qåṭal-tǻ* 'and you (m.sg.) will kill'.

The imperative, formed like *qṭol* in the G-stem, is largely unchanged. It cannot be negated; a negative command is expressed by the negation *ʾal* and a second person jussive, as in *ʾal ti-qṭol* 'don't kill'. In the feminine singular and the masculine plural, an epenthetic *i* (or rarely another vowel) is inserted between the first two radicals in context, as in *qiṭl-i*, *qiṭl-u*.

The Proto-Northwest-Semitic infinitive *qaṭālum is reflected in Biblical Hebrew by *qåṭol*, the so-called *infinitive absolute*. It can function as the subject or object of a verb, but is also used to replace a finite verbal form to express an event or a command. The more frequent nominalized form of the verb is the *infinitive construct*, usually formed like *qṭol*. Reflexes of other infinitive patterns are also rarely preserved. The active participle is formed like *qoṭel*, and *qåṭul* is the regular passive participle, reflexes of *qaṭīlum being preserved as nouns or adjectives with passive semantics.

Person, gender, number

In both Proto-Northwest-Semitic and Biblical Hebrew, like the personal pronoun, the verb distinguishes three persons, two genders (masculine and feminine) and two or three numbers (singular, dual, plural). The first person, and in Biblical

Table 2.10: Paradigm of the strong verb (G-stem)

person	suffix conjugation		prefix conjugations	
	PNWS	BH	PNWS	BH
3m.sg.	*qaṭal-a	*qåṭal*	*ya-qṭul(-u/-a)	*yi-qṭol*
3f.sg.	*qaṭal-at	*qåṭl-å*	*ta-qṭul(-u/-a)	*ti-qṭol*
2m.sg.	*qaṭal-ta	*qåṭál-tå*	*ta-qṭul(-u/-a)	*ti-qṭol*
2f.sg.	*qaṭal-ti	*qåṭal-t*	*ta-qṭul-ī(-na)	*ti-q(i)ṭl-i(-n)*
1sg.	*qaṭal-tu	*qåṭál-ti*	*ʾa-qṭul(-u/-a)	ʾɛ-*qṭ(o)l-å*
3m.pl.	*qaṭal-ū	*qåṭl-u*	*ya-qṭul-ū(-na)	*yi-qṭl-u(-n)*
3f.pl.	*qaṭal-ā	*qåṭl-u*	*ta-qṭul-na	*ti-qṭól-nå*
2m.pl.	*qaṭal-tum	*qṭal-tɛm*	*ta-qṭul-ū(-na)	*ti-q(i)ṭl-u(-n)*
2f.pl.	*qaṭal-tin	*qṭal-tɛn*	*ta-qṭul-na	*ti-qṭól-nå*
1pl.	*qaṭal-nā	*qåṭál-nu*	*na-qṭul(-u/-a)	*ni-qṭ(o)l-å*

Hebrew the third person plural, does not distinguish gender. Verbs agree with their subject. If the subject consists of both masculine and feminine nouns (or persons), the verb is usually masculine.

An overview of the different forms of the G-stem strong verb is given in table 2.10. The dual forms, only attested in Ugaritic and fairly uncertain, have been left out. Note that the prefix consonants and suffixes are the same for the other verbal stems (see below); only the stem and prefix vowels vary. The third person feminine plural prefix conjugation is usually reconstructed as *ya-qṭul-na, based on the presence of a *y- prefix in Aramaic, Arabic, and Gəʿəz. All of these forms can be analogical, however: 2m.pl. *ta-qṭul-ū : 3m.pl. *ya-qṭul-ū = 2f.pl. *ta-qṭul-na : 3f.pl. *ya-qṭul-na. The Biblical Hebrew form, *tiqṭólnå*, cannot be derived from the normally reconstructed paradigm in this way. Moreover, a *t-* prefix in the third person feminine plural also occurs in Modern South Arabian, suggesting that it is at least Proto-West-Semitic. The reconstruction given in table 2.10 also explains the origin of the problematic third person masculine plural forms with *t-* in Ugaritic and Amarna Canaanite: 2f.pl. *ta-qṭul-na : 3f.pl. *ta-qṭul-na = 2m.pl. *ta-qṭul-ū : 3m.pl. *ta-qṭul-ū (Voigt 1987a). The reconstructed perfect suffixes given are those arrived at in chapter 8.

Verbal stems

As in other Semitic languages, different verbal stems can be derived from the same verbal root. Usually, this derivation is used to express differences in valency, cf. the difference between *šå̱bar* 'he broke' (transitive, *qal*), *nišbar* 'it broke' (intransitive, *niqṭal*), *šibber* 'he shattered' (*piqṭel*), and **hišbir* 'he caused to (transitively) break' (*hiqṭil*). In comparative Semitics, each stem is known by a label which reflects one of its formal or semantic features; the primary stems reflected in Hebrew are the G-stem (German *Grundstamm*), the N-stem (formed with an n-prefix), the D-stem (German *Dopplungsstamm*) and the C-stem (causative). In the Hebrew grammatical tradition, the G-stem is known as the *qal* ('light'), as it is formally unmarked, while the names of the other stems are simply the third person singular masculine perfect forms of the formerly used dummy root *pʿl* in that stem, e.g. *niqṭal*, *piʿel*, *hitpaʿel*.

The G-stem (Hebrew *qal*) is the basic, underived stem. It is the most frequent and is semantically unmarked. A distinction is made between fientive roots, expressing events, and stative roots, expressing states. The forms of the fientive G-stem were discussed in the previous section. In Proto-Northwest-Semitic, the vowel of the prefix of the prefix conjugations was *-a- and the stem was *-qṭul- or *-qṭil-,[10] as in *ya-qṭul-u 'he will kill', while the stem of the suffix conjugation had two *a vowels, as in *qaṭal-a 'he has killed'. In the strong verb, only prefix conjugation stems with an *u vowel are preserved in Biblical Hebrew. In the prefix conjugation of stative roots, the vowel of the prefixes was *-i- and the stem contained an *a vowel, as in *yi-kbad-u 'he will become heavy', while the second vowel of the suffix conjugation was either *-i-, as in *kabid-a 'he is/was/will be heavy', or *-u-, as in *ʿamuq-a 'it is/was/will be deep'. Whether the G-stem stative suffix conjugation has *i or *u in the stem is lexically determined. These forms are reflected in Biblical Hebrew as *yiḵbaḏ*, *kå̱be̱ḏ*, and *ʿåmoq*. The occurrence of *-a-prefixes with fientive stems and *-i-prefixes with stative stems is known as the Barth–Ginsberg Law. An additional difference between fientive and stative roots is found in the participle: whereas fientive G-stems form both the active participle *qāṭilum > *qoṭel* 'killing (m.sg.)' and the passive participles *qaṭīlum and *qaṭūlum > *qå̱ṭul* 'killed (m.sg.)', stative roots form what we may call a stative participle on

[10] Fientive roots also had prefix conjugation stems like *-qṭal- if the second or third radical was a guttural.

the same base as the suffix conjugation, e.g. *kabidum > *kå̱be̱d̲* 'heavy (m.sg.)', *ʿamuqum > *ʿåmoq* 'deep (m.sg.)'.

The N-stem (Hebrew *nip̄ʿal*) is formally marked by a prefixed *n(a)-. Semantically, it is mediopassive, expressing a range of meanings where the subject is the patient of the verb, e.g. passive, medial, and reciprocal; additionally, it forms ingressives of stative roots. The stem of the suffix conjugation is *naqṭal- > *niqṭal*. The stem of the prefix conjugations is *-nqaṭil-; as is the case with stative G-stem verbs, the prefix vowel is *-i-, resulting in forms like *yi-nqaṭil-u 'he will be killed'. As *n regularly assimilates in Hebrew, the imperfect is reflected as *yiqqåṭel*. The participle may either be reconstructed as *munqaṭilum, as reflected in Akkadian and Arabic, or *naqṭalum, as reflected by Biblical Hebrew *niqṭål*.

The D-stem (Hebrew *piʿel*) is marked by gemination of the second radical in all forms. It expresses a range of different meanings, mainly transitive. The stem of the suffix conjugation is *qaṭṭil-, and the same stem is used for the prefix conjugations; Biblical Hebrew has two separate stems, perfect *qiṭṭel* besides imperfect *yqaṭṭel* (with a reduced prefix vowel). It is unclear whether the Proto-Northwest-Semitic prefix vowel should be reconstructed as *-u-, the form inherited from Proto-Semitic (i.e. *yu-qaṭṭil-u), or as *-a-, which is somewhat supported by evidence from Ugaritic and Hebrew (i.e. *ya-qaṭṭil-u; see Suchard forthcoming). The participle is formed with the prefix *mu- and the stem of the prefix conjugation, yielding *muqaṭṭilum > *mqaṭṭel*.

The C-stem (Hebrew *hip̄ʿil*; alternatively Š-stem or H-stem, based on the prefixes) most commonly expresses a causative meaning. The most probable reconstructions are *haqṭil- (from older *saqṭil-) for the stem of the suffix conjugation and *-saqṭil- for the stem of the prefix conjugations; the Biblical Hebrew forms are perfect *hiqṭil* and imperfect *yaqṭil*. In this stem, Biblical Hebrew still has a separate form for the jussive when not followed by suffixes, *yaqṭel*. The reconstructed prefix vowel is the same as that of the D-stem, and similarly, the participle is to be reconstructed as *musaqṭilum > *maqṭil*.

All of these stems, except for the N-stem, could give rise to further derivation. The so-called internal passive stems (sometimes called Gp, Dp, and Cp; Hebrew passive *qal*, *puʿal*, and *hɔp̄ʿal*) are not marked by affixes, but express their passivity through a different vowel pattern. The Gp prefix conjugation can be reconstructed as *yu-qṭal-u 'he will be killed'; other forms are uncertain. See table 2.11 for the Biblical Hebrew forms. Additionally, reflexive or reciprocal meanings can be expressed by the *t-stems*, formed with a *t which was either infixed after the first

radical (Gt, Ct) or prefixed before it (tD). Again, the precise reconstructions are uncertain. Only one t-stem occurs in Biblical Hebrew, the *hiṯpaʿel*: its perfect is formed like *hiṯqaṭṭel*, imperfect *yiṯqaṭṭel*.

The principal parts of the paradigms of the derived stems in Proto-Northwest-Semitic and Biblical Hebrew are given in table 2.11.

Weak verbs

The forms discussed so far are those of the *strong* verb, which has three consonantal radicals that are present in all forms. Verbs with only two radicals (sometimes only one) in part or all of the paradigm are called *weak*.[11] How these verbs should be reconstructed is highly controversial; some possible conclusions on the matter will be given in chapter 9. Categories of weak verbs will be referred to by their weak radical, with I referring to the first radical, II to the second, and III to the third. There are seven categories of weak verbs in Biblical Hebrew: I-ʾ, I-y (historically I-w for the largest part; Proto-Central-Semitic *w has changed to Proto-Northwest-Semitic *y in word-initial position), I-n, II-wy or *hollow* verbs (with no synchronic second radical, but sometimes reconstructed with *w or *y), II=III or *geminate* verbs (where the second radical is identical to the third), III-wy, and III-ʾ.

2.2.5 Particles

In Semitic grammar, the term *particles* is used to cover all parts of speech that are not declined or conjugated.

Prepositions can occur with suffixes or before nouns, which were then in the genitive in Proto-Northwest-Semitic. Some prepositions, which are usually reconstructed as ending in *-a, change this ending to *-ay before pronominal suffixes, resulting in interchanges like Biblical Hebrew *ʿal* (< *ʿala) 'on' besides *ʿålɛ́ḵå* (< *ʿalayka) 'on you (m.sg.)'. Three very frequent prepositions are proclitically attached to the following noun: they are *bV- > *b-* 'in, with', *lV- > *l-* 'to', and *kV- > *k-* 'like', showing reflexes of both *i and *a in various West Semitic languages; the Biblical Hebrew forms have all generalized *a. In most attested Northwest Semitic languages, including Hebrew, their reflexes are written as one word with

[11] Thus, contrary to the usage in Germanic linguistics, strong verbs are the norm, while weak verbs form a number of differently inflected subclasses.

Table 2.11: Verbal stems

PNWS	G fientive	G stative	D	C
perfect	*qaṭala	*kabida	*qaṭṭila	*haqṭila
imperfect	*yaqṭulu	*yikbadu	*yVqaṭṭilu	*yVsaqṭilu
participle	*qāṭilum	*kabidum	*muqaṭṭilum	*musaqṭilum
BH	fientive *qal*	stative *qal*	*piʿel*	*hip̄ʿil*
perfect	*qåṭal*	*kåb̲eḏ*	*qiṭṭel*	*hiqṭil*
imperfect	*yiqṭol*	*yik̲baḏ*	*yqaṭṭel*	*yaqṭil*
participle	*qoṭel*	*kåb̲eḏ*	*mqaṭṭel*	*maqṭil*
PNWS	Gp	N	Dp	Cp
perfect	*quṭVla	*naqṭala	*quṭṭVla	*huqṭVla
imperfect	*yuqṭalu	*yinqaṭilu	*yuqVṭṭalu	*yusVqṭalu
participle	*qaṭīlum, *qaṭūlum	*naqṭalum or *munqaṭilum?	*muqVṭṭalum	*musVqṭalum
BH	passive *qal*	*nip̄ʿal*	*puʿal*	*hɔp̄ʿal*
perfect	*quṭṭal*	*niqṭal*	*quṭṭal*	*hɔqṭal*
imperfect	*yɔqṭal*	*yiqqåṭel*	*yquṭṭal*	*yɔqṭal*
participle	*qåṭul*	*niqṭål*	*mquṭṭål*	*mɔqṭål*
PNWS	Gt		tD	Ct
perfect	*qtaṭVla?		*taqaṭṭVla	*staqṭVla?
imperfect	*yiqtaṭVlu		*yVtqaṭṭVlu	*yVstaqṭVlu
participle	*muqtaṭVlum		*mutqaṭṭVlum	*mustaqṭVlum
BH			*hiṯpaʿel*	
perfect			*hiṯqaṭṭel*	
imperfect			*yiṯqaṭṭel*	
participle			*miṯqaṭṭel*	

the noun they govern. Another important preposition in Biblical Hebrew is *ʾeṯ*, the so-called *nota objecti*, which marks definite direct objects. Its reconstruction is uncertain.

Some adverbs can be reconstructed for Proto-Northwest-Semitic, the most important ones being the negative adverbs *lā (used with all verbal tenses but the jussive) and *ʾal (used with the jussive) 'not'. Presumably, nouns in the accusative could also be used adverbially, e.g. *yawmam 'by day'. An adverbial ending *-åm* occurs on a few words in Biblical Hebrew, e.g. *yomåm* 'by day', although it is questionable whether it is related to the old accusative ending.

Two existential particles are used in non-verbal sentences. The reconstruction of the affirmative one, Biblical Hebrew *yeš*, is not completely certain, possibly *yiṯ(ay) or similar. It indicates the presence or existence of one or more things, like French *il y a* or German *es gibt*. The negative existential particle, Biblical Hebrew *ʾen*, can securely be reconstructed as *ʾayna. It is also used to negate non-verbal sentences.

Finally, there are a number of conjunctions, the most important coordinating conjunctions being *wa-[12] > *w-* 'and', *pa- 'and, so' (not reflected in Biblical Hebrew), and *ʾaw > *ʾo* 'or', and the most important subordinating conjunctions being *ʾim(ma) > *ʾim* 'if' and *kī > *ki* 'that, when, if'.

[12] One of the few exceptions to the sound change of initial *w- > *y-, possibly for prosodic reasons.

3 The Canaanite Shift

3.1 Introduction

The Canaanite Shift is one of the better-known sound changes to have affected Biblical Hebrew. Phonetically, it is uncomplicated: at some point, some cases of Proto-Northwest-Semitic *ā shifted to *ō in an ancestor of Hebrew, resulting in correspondences of Biblical Hebrew *o*, as in *šålom* 'well-being', to reflexes of *ā in other languages, as in Aramaic *šlām*, Arabic *salāmun*, Gəʿəz *salām*, and Akkadian /šalāmu/. As Proto-Northwest-Semitic did not have a phonemic *ō vowel, this change of *ā > *ō would originally have been phonetic, only reaching a phonemic status when new cases of *ā were created by the contraction of triphthongs (see below and chapter 5). Besides Hebrew, Phoenician and Amarna Canaanite also attest the operation of this sound change, hence its identification as a shared Canaanite innovation. As the Phoenician and Amarna Canaanite data are much more sparse than those attested in Hebrew, they do not contribute anything to the investigation of the Canaanite Shift's conditioning (Suchard 2012), and consequently, they will not be discussed in this chapter.

The controversy surrounding the Canaanite Shift is due to a number of apparent exceptions, where *ā*-vowels in other languages correspond to Biblical Hebrew *å*, not **o*. As sound laws should be exceptionless, this has led to two approaches which aim to resolve this problem. Either the Canaanite Shift is given a relatively restrictive conditioning, which then, together with analogy, explains the anomalous cases of *å* for expected **o*, or the reconstructions of the supposed counterexamples are revised, showing that they did not contain *ā at the time of the Canaanite Shift and could therefore not have been affected by it. After a brief consideration of various previous proposals, we will attempt to combine these approaches, first making sure that only words and grammatical categories with reconstructible *ā are taken into account, and then establishing phonetically plausible conditions which adequately explain the reflex of *ā in these words.

3.2 Previous suggestions

3.2.1 Stress-conditioned

Like many after him, Brockelmann (1908: 142–143) holds that the Canaanite Shift only affected stressed vowels, formulating it as *ā́ > *ṓ. Unstressed and secondarily stressed syllables kept *ā, giving rise to interchanges such as *kå̄ḵå* 'thus' but *ko* 'idem', *mā* 'what' but *kåmóni* 'like me', etc. Nouns would originally have shown a similar interchange, as the position of the stress varied throughout the paradigm, but either the *ā or the *ō was then generalized . This then resulted in some apparent exceptions like *ṭabbåḥ* 'cook', formed after the plural *ṭabbåḥim* < *ṭabbāḥ́ima. The observation that the Canaanite Shift took place in the *qal* active participle *qoṭel*, as well as a few other forms that show an *o* which is never stressed in Biblical Hebrew, leads Brockelmann to posit the same stress system as is found in Classical Arabic (but see chapter 4) for Proto-Canaanite, in which the stress falls on the last heavy (i.e. closed or containing a long vowel) non-final syllable of a word, or, if the word does not contain any heavy syllables, on the first syllable. Thus, *qā́ṭilum would have an accented *ā́, which then underwent the Canaanite Shift.

Brockelmann is inconsistent in his explanation of the *å* in the perfect of II-wy and III-wy roots, like *qåm* 'he stood' and *gålå* 'he uncovered'. On page 142, he attributes this seeming non-operation of the Canaanite Shift to the weaker stress that verbs bore at the time, but further on in the same work, he gives a different explanation: *qåm* has restored its *ā based on analogy with forms like *qámtå* 'you (m.sg.) stood up' (p. 613), and the final *ā of *gålå* was 'anceps', i.e. neither quite long nor short, and therefore did not undergo the Canaanite Shift, like the final vowel in *ʾattå* 'you (m.sg.)' and the second person masculine singular personal suffix *-ḵå* (p. 627; see chapter 8). Finally, he notes that the Canaanite Shift did not occur in words where *ā was preceded by a round vowel, viz. *u or *ō, citing words such as *qɔrbån* 'offering' and *tošåḇ* 'resident alien' (p. 255). Thus, he believes in a Canaanite Shift that was both conditioned by stress and by preceding vowels.

The most problematic part of Brockelmann's account is his explanation (or rather, explanations) of the II-wy and III-wy perfect forms. It seems unlikely that verbs like *qåm* and *gålå* would have been less prominently stressed than proclitic prepositions like *kmo* 'like' < *kamā; also note that pretonic lengthening did not operate in *kamā, which would otherwise have yielded **kåmo*, while it did take

place in *galā́ > *gālā́ > *gålå* (see chapter 4). The alternative explanations are no less problematic. Brockelmann attributes the preservation or restoration of *ā in *qåm* to analogy with the first and second person forms like *qámtå*, but this analogy cannot have been modeled on the strong verb, as this should have yielded a different form: *qaṭalta (2m.sg.pf.) : *qaṭala (3m.sg.pf.) = *qamta (2m.sg.pf.) : *qama (3m.sg.pf.) > **qam*, not *qāma > *qåm*. A similar alternation between a long vowel in an originally open syllable and a short vowel in an originally closed one does occur in the imperfect of II-wy verbs, e.g. *tåqúmu* 'you (m.pl.) will stand up' < *taqūmū besides **tåqómnå*[1] 'you (f.pl.) will stand up' < *taqumna, but this does not seem a very likely model for an analogical innovation in the perfect. Indeed, if the perfect paradigm of the II-wy verbs should have undergone analogical leveling, as Brockelmann, suggests, we may wonder why the third person forms should not have extended their vowel to the first and second persons, resulting in ***qom* 'he stood up', ***qómtå* 'you (m.sg.) stood up', etc.; a very similar change does seem to have affected the III-› verbs, where analogy with the third person forms like *qara›a 'he called' restored the sequence *-a›- in closed syllables as in *qara›ta > *qårā́ṯå* 'you (m.sg.) called', which should otherwise have yielded *qara›ta > *qarāta > ***qåróṯå*, like *ra›sum > *rāsum > *roš* (Birkeland 1940: 40). For the problems associated with the concept of anceps vowels, which Brockelmann posits as an alternative explanation for the retention of word-final *-å* in *gålå*, see chapter 8.

More or less the same formulation of the Canaanite Shift is adopted by Bergsträsser (1918: 143), who additionally names Aramaic influence as a source of preserved *ā. On page 145, he makes the important point that unstressed *ō (which often derives from *ā) occasionally appears as *u* in Biblical Hebrew, cf. forms like *nåsoḡ* 'he turned back' besides *nsuḡóṯi* 'I turned back' or *måṯoq* 'sweet (m.sg.)' besides *mṯuqå* 'idem (f.sg.)'. In these forms, he sees the traces of a regular sound law which has largely been cancelled out by the effects of analogy. No cases of *ō > *u* are attested in word-initial syllables, cf. the many forms with unstressed *o* like the *qal* active participle *qoṭel*, where it cannot have been analogically restored; hence, we may tentatively state that *ō became *ū in non-initial unstressed syllables. Furthermore, Bergsträsser disagrees with Brockelmann on the exact prehistory of II-wy perfects like *qåm*, which he considers unexplained. More

[1] Not actually attested, but cf. forms like *wattåšóḇnå* 'and they returned' < *(wa-)taṯubna from *šwb* 'to return'.

recently, Blau (2010: 48, 136) has also posited a stress-conditioned Canaanite Shift.

If the shift was indeed conditioned by the position of the stress, we may expect to find alternations between (originally) stressed *o* and unstressed *å*. As we shall see, however, no such alternations can unambiguously be identified, a fact which has led scholars to posit a non-stress-conditioned formulation of the Canaanite Shift.

3.2.2 Unconditioned

Birkeland (1940) discounts some of Brockelmann's most important counterexamples of the Canaanite Shift. Based on irregular correspondences and evidence from Arabic and Phoenician spellings, he explains II-wy and III-wy perfect forms like *qåm* and *gålå* as relatively late contractions from triradical forms like *qawama and *galawa, which postdate the operation of the Canaanite Shift (pp. 41–42; see chapter 5 for a discussion of this contraction). Word-final cases of *-å*, in Birkeland's view, are late restitutions, resulting from dialect borrowing (p. 48, see chapter 8). Having thus eliminated most of the counterexamples that motivated the proponents of stress conditioning, he posits an unconditioned shift of *ā > *ō (ibid.). This explanation is adopted by Christian (1953), Rabin (1960b), and Dolgopolsky (1999), among others; the latter proposes a slightly different development of *aʾ to explain the presence of the ʾ in Samaritan Hebrew words like *rēʾoš* 'head' < *raʾsum.

The arguments given to explain the non-operation of the Canaanite Shift in some forms are compelling. Unfortunately, the proponents of an unconditioned change do not explicitly addresses the issue of nouns which must go back to forms with *ā, yet have not undergone the Canaanite Shift, like *tošåḇ*. This leads Blau (2010: 136) to rightly criticize these unconditioned accounts of the Canaanite Shift for their lack of explanatory power.

3.2.3 Bauer & Leander (1922)

As was discussed in the introduction to this work, Bauer & Leander (1922) treat the cases of apparently preserved *ā as evidence for their theory of Hebrew as a mixed language. As they can simply explain every non-occurrence of the Canaanite Shift as a later intrusion from the 'young' Semitic stratum spoken by the Israelite

invaders, many problematic forms that warrant special treatment for Brockelmann (1908) are dismissed, although his formulation of the Canaanite Shift in general is retained and held to have only applied to the 'old', pre-Israelite Canaanite stratum in Hebrew. Again, there is no good evidence to suppose Hebrew was a mixed language, so this explanation cannot be accepted.

3.2.4 Summary

The main point of contention in the debate surrounding the Canaanite Shift is whether it was stress-conditioned. Of the proposals that have been made so far, those that deny the relevance of the stress leave some of the material unexplained. Those scholars that posit stress conditioning, however, largely base themselves on forms that probably did not have *ā at the time of the Canaanite Shift's operation. In the next section, we will examine the possible examples and counterexamples of the Canaanite Shift to see whether stress conditioning is truly necessary to account for the data, and what other conditioning factors may be identified.

3.3 Data

In this section, we will consider the possible occurrences of Proto-Semitic (*aˀ >) *ā > Canaanite *ō and (*aˀ >) *ā > *ā. To ascertain that the words and patterns we will be looking at contained *ā at the time of the Canaanite Shift, we must exclude other sources of Biblical Hebrew *o* and *å*. Alternative sources of Biblical Hebrew *o* are *u in stressed syllables, as in the imperfect *yaqṭulu > *yiqṭol*; possibly *u in some pretonic syllables in pausal forms, as in *yaqṭulūna > *yiqṭolun* (see chapter 4); *u before originally geminated gutturals and *r, as in *yuburraku > *yb̲orak̲* 'he will be blessed'; syllable-final *aw in most positions (see chapter 5 for the conditioning), as in *t̲awrum > *šor* 'bull'; *V̆wu and *V̆yu, as in *bawut̲a > *boš* 'he was ashamed' (see chapter 5); and loanwords containing *ō or *o. Alternative sources of Biblical Hebrew *å* are *a which has undergone tonic, pretonic or pausal lengthening (see chapter 4), as in *dabarum > *dåb̲år* 'word'; *a before originally geminated gutturals and *r, as in *raʿʿatum > *råʿå* 'evil'; *V̆wa and *V̆ya, as in *ʿiyarīma > *ʿårim* 'cities' (see chapter 5); and loanwords containig *ā, especially from Aramaic.

Table 3.1: *qāṭum nominals

BH	meaning	cognates
ʾon	'virility'	Ug. <an> 'power'
ʾor	'light'	Ug. <ar>
goy	'nation'	Mari Akk. /gāʾum/ 'gang' (WS loan)
doḏ	'beloved', 'uncle'	Akk. /dādu/ 'beloved', Arab. *dādun* 'foster-father'
dor	'generation'	Aram. *dār*
ḥol	'sand'	Aram. *ḥāl* 'sand', Arab. *ḥāl* 'mud'
ṭoḇ	'good'	Aram. *ṭāḇ*
kos	'cup'	Aram. *kās*, Arab. *kaʾsun*, Akk. /kāsu/ (see text)
qol	'voice'	Aram. Gə. *qāl*
šoq	'thigh'	Aram. *šāq*, Arab. *sāqun*

In order to be sure that a certain vowel goes back to *ā, then, we must show that alternative reconstructions are implausible on phonological or morphological grounds, and that there is no reason to assume that the word it occurs in has been borrowed. Alternatively, a reconstruction with *ā can be supported by cognate evidence, which will mainly be taken from Aramaic (in its different dialects), Classical Arabic, Gəʿəz, and Akkadian. All of these languages preserve *ā as *ā*, but here too, *ā* has alternative sources. In Aramaic, *ā* (or *å*) can also go back to *V̆wa or *V̆ya (Beyer 1984: 83). Arabic *ā* can reflect *awV̆ or *ayV̆ in open syllables.[2] Gəʿəz *ā* can come from *a when adjacent to a guttural, as in *baḥr > *bāḥr* 'sea' (Tropper 2002: 36–38). In Akkadian, the loss of Proto-Semitic gutturals (except for *ḫ), *w and *y lengthened *a > /ā/ in a number of circumstances (Huehnergard 1997: 38–39); the most relevant for current purposes is that Old Babylonian /ā/ can derive from *V̆ʔA, ʔ representing *ʾ, *h, *ġ, *w or *y, and A representing *a or *ā.

3.3.1 *ā > *o*

*qāṭum

The words in table 3.1 can securely be reconstructed as coming from a *qāṭum pattern.

[2]Cf. Classical Arabic *māta*, Biblical Hebrew *meṯ*, Gəʿəz *mota* 'he died', all < *mawita (Suchard forthcoming).

Sub voce ḥoăḥ ‘thorn’, Koehler & Baumgartner (1994–2001: 296) cite an Akkadian cognate /ḫāḫu/, but this is not listed in the CAD or Von Soden (1965–1981). A possibly related form /ḫaḫi(n)nu/ (Von Soden) or /ḫaḫīnu/ (CAD) ‘thorny plant’ is attested, though. Akkadian /ḫaḫḫu/ has been interpreted as an Aramaic loanword, reflecting a putative Aramaic *ḫaḫḫ ‘hook’, but the meaning of the Akkadian is uncertain (Abraham & Sokoloff 2011: 33). Jewish Babylonian Aramaic and Syriac, on the other hand, have *ḥoḥå/ḥōḥā* as cognates. The alternate Biblical Hebrew form *ḥåḥ*, plural *ḥaḥim*, seemingly < *ḫaḫḫum, shows that the word does not come from a II-w root. This rules out the reconstructions *ḫawḫum and *ḫawuḫum, so it seems safest to assume a *quṭṭum pattern for the Northwest Semitic form of this word.

ḥopō ‘shore’ might be compared to Arabic *ḥāfatun* ‘edge’, but it is more plausibly connected to Ugaritic <ḫp y[m]> ‘seashore’ (KTU 1.3ii.7). As the Ugaritic <ḫ> cannot correspond to the Arabic *ḥ*, the apparent cognate must be rejected, and the original vowel in Biblical Hebrew *ḥopō* remains uncertain.

kos ‘cup’ could come from original *kaʾsu, as Arabic *kaʾsun* suggests. As will be seen below, however, Biblical Hebrew *o* that demonstrably derives from original *aʾ is usually spelled with the etymological *ʾålepō* in other cases. Thus, the attested spelling <kws>, rather than **<kʾs>, points to *kāᵗsum, in which case the ʾ in the Arabic form would be secondary. Akkadian /kāsu/ is compatible with both reconstructions, but Aramaic *kās* points to *kāᵗsum, as *kaʾᵗsum would have yielded Aramaic ***kēs* (Beyer 1984: 138). In either case, we should expect the *o* in Biblical Hebrew *kos* to be the result of the Canaanite Shift.

The etymologies of *koăḥ* ‘might’, *loṭ* ‘covering’, *moṭ* ‘bar’, *noăḥ* ‘rest’, *nopō* ‘peak?’, *soḏ* ‘council’, *ʿoḏ* ‘still’, *ʿor* ‘skin’, and *tor* ‘turtle dove’ are uncertain, so these words could come from either *qāṭu, *qaw(u)ṭu or *quṭ(ṭ)u forms.

*qaṭālum

Secure *qaṭāl(at)um forms can be found in table 3.2.

šmonɛ ‘eight’ is included in this section, even though it is not strictly a *qaṭālum nominal. Based on the West Semitic forms, this numeral should be reconstructed as *ṯamāniyum. The initial /s-/ instead of **/š-/ in Akkadian is irregular.

Fox (2003: 184) states that “a few **qatul* adjectives have completely merged, by analogy, with **qatāl*, so that vowel reduction does not occur, for example, in the construct plural *qəṭôlê*”, listing *gåḏol* ‘large’, *ṭåhor* ‘pure’, *qåḏoš* ‘holy’, *qåroḇ* ‘near’,

Table 3.2: *qaṭālum nominals

BH	meaning	cognates
ʾåṯon	'she-ass'	Aram. *ʾaṯṯān*, Arab. *ʾatānun*, Akk. /atānu/
kåḇoḏ	'glory'	(see text)
*ʿăḇoḏå**	'service'	Arab. *ʿibādatun* (see text)
ʿåroḏ	'wild ass'	Aram. *ʿrāḏ*
*śʿorå**	'barley'	Aram. *sʿārā*
šålom	'well-being'	Aram. *šlām*, Arab. *salāmun*, Gə. *salām*, Akk. /šalāmu/
šåloš	'three'	Aram. *tlāṯ*, Arab. *ṯalāṯun*, Gə. *śalās*, Akk. /šalāš/
šmonɛ	'eight'	Aram. *tmānā*, Arab. *ṯamānin*, Gə. *samāni*, Akk. /samāne/ (see text)

* The original quality of the first vowel cannot be determined.

ḥåson 'strong', and *råḥoq* 'far'. As *qaṭālum adjectives with similar semantics are found in Arabic and Gəʿəz (pp. 181 and 183, respectively), however, and the Hebrew adjectives he lists have no clear *qaṭulum cognates, we should not completely rule out the possibility that they reflect *qaṭālum, as Fox concedes. On the other hand, *yåṯom* 'fatherless boy' also behaves like a *qaṭālum noun, but Syriac *yaṯmā* shows it was originally *qaṭulum.

The first vowel of *ʿăḇoḏå* 'service' cannot be securely reconstructed; while the Arabic cognate *ʿibādatun* has an *i* in this position, Arabic *qiṭālun* can go back to both *qiṭālum and *qaṭālum (Fox 2003: 180). *ʾåḏon* 'lord' is probably originally *ad-ānum, i.e. *ad- with the *-ānum suffix (see p. 77 below), as is shown by the alternation between Ugaritic <ad> and <adn> (also attested in the syllabic spelling *a-da-nu*) 'father, lord'.

While they do show an *o* that is preserved in unstressed, open syllables, *ʾåḥor* 'back', *bśorå* 'report', *ḥăḡore* 'girded' (construct plural), *måzor* 'boil', **nVḵoăḥ* 'straight(ness)' (only attested with suffixes) and *qṭorå* 'sacrificial smoke' could all be either *qVṭāl(at)u or *qVṭul(at)u forms. In the latter case, they would have originally shown pretonic gemination of the consonant following their *u (see chapter 4), which was later degeminated with compensatory lengthening of *o to *ō. *kåḇoḏ* 'glory', however, has a non-reducing *o* that cannot be due to a following guttural, and since it is clearly connected to the attested root *kbd* 'to be heavy,

respected', a *qaṭālu reconstruction seems certain. *gåḥon* 'belly (of reptile)' also preserves its *ḥolem*, but as it is not derived from an attested Biblical Hebrew root, its etymology is somewhat unsure.

As there are few *qaṭulum nouns attested in Semitic (only unambiguously attested in Arabic; Fox 2003: 173ff.), *dårom* 'south', *ʿåroḇ* 'noxious insects', *ʿåśor* 'set of ten' and *råzon* 'high official' are more likely to be *qaṭālum forms, but this remains uncertain, as they are only attested without suffixes.

Wagner (1966: 127) considers the possibility that *båḡoḏå* 'treacherous' is a loanword or a secondary creation based on a borrowing of the uniquely Aramaic agent noun pattern *qāṭōl*; this would explain its unreduced *å* in the first syllable. Semantically, the same explanation might hold for *båḥon* 'assayer' and *ḥåmoṣ* and *ʿåšoq*, both 'oppressor'. These three words are all attested only once or twice, in literary prophetic texts. Two other *hapax legomena* occur in Ezek 27:24, a prophecy against Tyre: *bromim* 'two-coloured fabric' and *glome* 'garments' (construct state plural). Given the context and their meaning, these might be loanwords.

*qiṭālum / quṭālum

These two patterns have largely merged in Biblical Hebrew and are therefore treated under the same heading. As above, securely reconstructed *qiṭālum, *quṭālum and similar forms can be found in table 3.3.

It is not clear whether the quality of the reduced ĕ in *ʾĕnoš* 'man(kind)' must go back to *i or could also originate in *u. Both vowels are attested in the cognates listed. As Ugaritic, a Northwest Semitic language, is genetically closer to Hebrew than Arabic, we may tentatively adopt the vowel reflected in the former language and reconstruct the precursor to the Hebrew form as *ʾināsum. *broš* 'juniper' has the Aramaic cognate *brōṯ*, but the Aramaic *ō* is probably an independent development from *ā which occurred after *r in some cases (Beyer 1984: 137). *gåron* 'throat' and *låšon* 'tongue' go back to *garānum and *lasānum, respectively, innovative forms Hebrew shares with Ugaritic and possibly Aramaic, but which are distinct from their cognates in the other branches of Semitic, reflecting presumably older *girānum and *lisānum; the latter form is also reflected in Punic *alsounalph* 'oxtongue (a kind of plant)', with reduction of *i (Steiner 2001).[3] *lḇonå* 'incense', a widely borrowed *Kulturwort*, is also reflected by borrowed forms outside of Semitic. Mainly based on these forms like Greek λίβανος and Beja *libān*, Müller

[3] I thank Dr. C. Stadel for pointing this article out to me.

Table 3.3: *qiṭālum and *quṭālum nominals

BH	meaning	cognates
ʾăḇoy	‘uneasiness’	*
ʾezor	‘loincloth’	Arab. *ʾizārun*
ʾĕlohim	‘God, god(s)’	Aram. *ʾĕlâh/ʾalāhā*, Ug. <ilh>, Arab. *ʾilāhun*
ʾĕnoš	‘man(kind)’	Aram. *ʾenāš*, Ug. <inš>, Arab. *ʾunāsun**
bloye	‘waste (construct)’	*
broš	‘juniper’	Akk. /burâšu/*
gåron	‘throat’	Arab. *jirānun*, Akk. /girānu/*
(ʾɛ)*zroăʿ*	‘arm’	Aram. *drāʿ*, Arab. *ḏirāʿun*
ḥăḇol(åṯo)	‘(his) pledge’	*
ḥălom	‘dream’	*
ḥămor	‘donkey’	Aram. *ḥmār*, Arab. *ḥimārun*, Akk. /imēru/
ysoḏ	‘foundation’	Syr. *ʾissāḏā*, Arab. *wisādun* ‘pillow’
lḇonå	‘incense’	Arab. *lubānun*, Tigriña *ləbanät**
låšon	‘tongue’	Aram. *lišš̄ān*, Syll. Ug. *la-ša-nu**
ʿăḇoṯ	‘rope’	*
ploni	‘someone’	Aram. *plān*, Arab. *fulānun**
pṯoṯe	‘morsels (construct)’	Arab. *futātun*
rḥoḇ	‘open place’	*
śroḵ	‘sandal-thong (construct)’	Arab. *širākun*
thom	‘primeval ocean’	Akk. /tiʾāmtu/
ʾɛṯ-/t-mol	‘yesterday’	Gə. *təmāləm*, Akk. /timāli/

*See text.

(1974) reconstructs the source word as *libān, an Ancient South Arabian term, in his opinion. The Hebrew formation with an added feminine ending is most closely matched by the Tigriña cognate, *ləbanät*; both forms can be reconstructed as *libānat-. The *u* in the Arabic form may be due to assimilation to the following bilabial. *ploni* 'someone' has additional material after their third radical, but Arabic *fulānun* points to an original *qutālum form.

ʾăḇoy 'uneasiness', from the root *ʾby*, must be reconstructed with *ā as its second vowel, as *y and the surrounding vowels would have contracted to a monophthong if the preceding vowel were short (see chapter 5). For the same reason, *bloye* 'waste (construct)' must also be reconstructed with *ā in the second syllable. That the *ḥolem* in *ḥăḇol* 'pledge' is historically long and thus derives from *ā is shown by its preservation in the suffixed feminine form *ḥăḇolåṯo* 'his pledge'; non-reduction of *o* is also seen in *ḥălom* 'dream', *ʿăḇoṯ* 'rope' and *rḥoḇ* 'open place'. The same cannot be said for *ḥăḡor* and *ḥăḡorå* 'belt', *ṭḥorim* 'hemorrhoids', *mlo(ʾ)* 'contents' or *ṣror* 'pouch', though, as the *o* precedes a *reš* or guttural here and could therefore be secondary.

While *nḥušå* 'bronze' could come from *nuḥāsatum (cf. Arabic *nuḥāsun*), with further development of the unstressed *ā > *ō > *u*, it seems more likely that the Biblical Hebrew words derives from a form with an *ū in the second syllable, as is supported by the more common synonym *nḥóšɛṯ* < *nVḥustum (possibly < *nVḥūstum). A semantically similar example of a *quṭālum pattern being recast as *qVṭūlum in Biblical Hebrew is found in *ḥåruṣ* 'gold' besides Akkadian /ḫurāṣu/. Finally, Wagner (1966: 18) lists *ʾɛ̆ḡoz* 'nut' as an Aramaic loanword, while *dror* 'manumission' is a loan from Akkadian /(an)durāru/: the development of the latter can be traced throughout the Akkadian language, while Biblical Hebrew *dror* appears isolated, without an associated root (Mankowski 2000: 50). The fact that Akkadian /ā/ was borrowed as *ō shows that the speakers of Hebrew had some intuitive grasp of the correspondence of Akkadian /ā/ to Hebrew *ō. Alternatively, Mankowski (ibid.) suggests a loan extension of a native Hebrew word meaning 'liquid' based on the meaning of the cognate Akkadian word.

*qVṭṭālum

A small group of nominals which mainly describe human characteristics show gemination of the second radical and a following *o* which is not reduced when unstressed; this group includes *gibbor* 'mighty (one), warrior', *yilloḏ* 'newborn',

yissor ‘reprover’, and *šikkor* ‘drunk’. The lack of gemination in the *r* of Samaritan Hebrew *aggibbūrəm* (Tiberian *haggibborim*) ‘the warriors’ and the fact that *yilloḏim* ‘newborn(s)’ shows an unreduced *ḥolem* before a non-guttural consonant suggest that these words should be reconstructed as *qVṭṭālum.

The quality of the first vowel is hard to determine. Traditionally (e.g. Bauer & Leander 1922: 478–479), this small category has been connected with the *qaṭṭālum nouns found in many other Semitic languages (see below), e.g. Syriac *gabbārā* ‘warrior’. Fox (2003: 276), however, follows Huehnergard (1992: 222, n. 55) in reconstructing them as *quṭṭulum. The attested *ḥireq* in the first syllable would then be the result of back vowel dissimilation: *quṭṭul- > *qiṭṭul- > *qiṭṭol*.

Both reconstructions have their merits and problems. The *qaṭṭālum reconstruction is supported by the nice correspondence between Hebrew *gibbor* and Syriac *gabbārā* ‘warrior’, but no other correspondences; *quṭṭulum, too, lacks convincing cognate pairs. Fox and Huehnergard object that a *qaṭṭālum reconstruction cannot explain the *ḥireq* found in the Biblical Hebrew reflex of the pattern, *qiṭṭol*, but their proposed *quṭṭulum does not match the attested plural, *qiṭṭolim*, and they must resort to an explanation based on analogy. Finally, we should not exclude the possibility that the vowel goes back to an original *i, as is the case in the early loanword *kinnor* ‘zither’, ultimately from an Indian word like Telugu *kinnāra*. *qiṭṭālum is a reconstructable pattern, and the negative meaning of these nouns in Arabic (e.g. *ḫinnābun* ‘stupid, thick-nosed’; Fox 2003: 279) fits *šikkor* ‘drunk’, at least. For ease of reference, these four words and *kinnor* are listed among the possible *qVṭṭālum nominals in table 3.4, but their reconstruction with *ā cannot be ascertained.

While *ṣinnor* ‘pipe?’ would formally seem to belong to this group, its exact meaning and etymology are unclear (Koehler & Baumgartner 1994–2001: 1038), and it will therefore be excluded. *rimmon* ‘pomegranate’ also does not match the other words semantically, but its reconstruction as *qVṭṭālum is supported by Aramaic *rummān*. Both words probably derive from either *quṭṭālum (with dissimilation of *rumm- > *rimm- in Hebrew) or *qiṭṭālum (with assimilation of *rimm- > *rumm- in Aramaic).

This leaves us with two *qaṭṭol* nouns with one attestation each. *qanno* ‘jealous’ and *rattoq* ‘chain’ can both plausibly be interpreted as fossilized *piʿel* infinitives (see below), in which case *ʾel-qanno* ‘a jealous God’ in Josh 24:19 would actually be ‘a God of being jealous’. *rattoq* is textually uncertain and may be a corrupt form.

Table 3.4: possible *qVṭṭālum nominals

BH	meaning
gibbor	'mighty, warrior'
yilloḏ	'newborn'
yissor	'reprover'
kinnor	'zither'
rimmon	'pomegranate'
šikkor	'drunk'

Productive categories

There are also a number of productive morphemes and noun classes that show an *o* for older *ā. Due to their productivity, they offer less information about the precise conditioning of the sound change, but they are still useful.

In nominal derivation, there are several patterns with m-prefixes. *mVqṭalum patterns of II-wy roots have undergone a sound change *CWa > *Cā (with W representing *w and *y), resulting in *mVqālum, probably already in Proto-Semitic (Brockelmann 1908: 378). For *maqṭalum place nouns, for instance, we find Aramaic *mqām* from the root *qwm*, Arabic *makānun* and Gəʿəz *makān* from *kwn*, all meaning 'place'. The Aramaic word's Biblical Hebrew cognate, *måqom* 'place', shows that these *maqālum words underwent the Canaanite Shift in Hebrew. A list of attested words can be found in table 3.5; some words that do not show a strong semantic link with the *maqṭalum category and have *r* or a guttural as their third radical have been excluded, as they could also derive from *maqṭullum > *maqūllum > *maqullum.

A similar category is that of *mVqṭālum nouns. These are less frequent than m-prefixed patterns with a short second vowel, but they do occur, e.g. Syriac *maḵtāšā* 'blow' or Arabic *miftāḥun* 'key'. Unless the word is attested with suffixes in Biblical Hebrew, this category is indistinguishable from *mVqṭulum nouns, as is also the case if the *ḥolem* precedes a guttural or *r*. Only three words can thus be shown to be derived from a *mVqṭālum pattern: *maṭmon* 'treasure', *maḵʾoḇ* 'pain', and *miḵšol* 'obstacle'.

A final but very frequent example of the Canaanite Shift operating on a derivational morpheme is the suffix *-ānum, with several different meanings that need not concern us here. As will be seen below, this suffix is sometimes found in

Table 3.5: *mVqṭalum nouns from II-wy roots

BH	meaning	BH	meaning
måʾor	'luminary'	*mnorå*	'lampstand'
måḇo	'entrance'	*måʿōḡ*	'bread?'
måḏon	'strife'	*måʿon*	'dwelling'
mḏoḵå	'mortar'	*mʿonå*	'dwelling'
måzon	'food'	*måṣoḏ*	'hunting net'
måḥol	'round dance'	*mṣoḏå*	'net'
mḥolå	'round dance'	*mṣolå*	'depth'
måḵon	'site'	*måṣoq*	'stress'
mḵonå	'base'	*måṣor*	'stress, siege'
målon	'place to stay the night'	*måqom*	'place'
mmoṯe	'death (construct)'	*måqor*	'well, source'
mnoḏ	'shaking (construct)'	*mårom*	'height'
månos	'refuge'	*måśoś*	'joy'
månor	'beam'	*måšoṭ*	'oar'

Biblical Hebrew as *-ån*, but its more common reflex is *-on*. Table 3.6 lists the attested words with *-on*.

Besides derived categories, there are a few cases of the Canaanite Shift operating in nominal inflection and verbal conjugation. In the nominals, there is the extremely frequent plural suffix *-oṯ* < *-ātum, cf. Aramaic (construct state) *-āṯ*, Arabic *-ātun*, Gəʿəz *-āt*, and Akkadian /-ātu/. This plural suffix, which is almost always attached to feminine nominals, is so common that it would be very impractical to list all of its occurrences; besides, it never occurs with *å* < *ā, so it cannot tell us all that much about the conditioning of the Canaanite Shift.

The same goes for two technically nominal patterns which are strongly associated with the verb. Firstly, there is the *qal* active participle *qoṭel* < *qāṭilum, cf. Aramaic *qāṭel*, Arabic *qāṭilun*, Akkadian /qāṭilu/, all active participles, and Gəʿəz agent nominals like *ṣādəq* 'just' (Fox 2003: 239). There are also some Biblical Hebrew *qāṭilum nouns which are not (or not transparently) related to a verb, such as *ʾoyeḇ* 'enemy' and *boqer* 'herdsman'. Secondly, there is the *qal* infinitive absolute *qåṭol* < *qaṭālum, cf. Akkadian /qaṭālu/.[4] In Biblical Hebrew, other verbal stems form an infinitive absolute in *-ṭol* which was analogically created on this

[4]While this reconstruction is not certain (Strich 2013), it will be maintained in the present work.

Table 3.6: *-ānum nominals

BH	meaning	BH	meaning
ʾăḇaddon	‘perdition’	*maššåʾon*	‘deception’
ʾɛḇyon	‘poor (m.sg.)’	*niqqåyon*	‘innocence’
ʾaḡmon	‘rush’	*sillon*	‘thorn’
ʾaḏmoni	‘red (m.sg.)’	*siryono*	‘his coat of mail’
ʾaḥăron	‘later (m.sg.)’	*ʿiwwåron*	‘loss of sight’
ʾišon	‘pupil (of eye)’	*ʿizḇonáyiḵ*	‘your (f.sg.) merchandise’
ʾelon	‘big tree’	*ʿɛlyon*	‘highest (m.sg.)’
ʾallon	‘big tree’	*ʿiṣṣåḇon*	‘pain’
ʾalmoni	‘someone’	*ʿăqallåṭon*	‘crooked (m.sg.)’
ʾåson	‘accident’	*ʿeråḇon*	‘pledge’
bizzåyon	‘contempt’	*ʿɛrmon*	‘plane tree’
biṭṭåḥon	‘confidence’	*ʿiśśåron*	‘tenth part’
biṯron	‘gully?’	*piḏyon*	‘ransom (construct)’
gåʾon	‘pride’	*paʿămon*	‘bell’
gillåyon	‘hand mirror?’	*piqqåḏon*	‘deposit’
daʾăḇon	‘despair (construct)’	*pråzon*	‘country dwellers’
deråʾon	‘abhorrence’	*piṯḥon*	‘reason to speak (construct)’
higgåyon	‘whispering’	*piṯron*	‘interpretation (construct)’
heroneḵ	‘your (f.sg.) pregnancy’	*ṣawwroń́yiḵ*	‘your (f.sg.) necklaces (pause)’
heråyon	‘conception’	*ṣåyon*	‘waterless country’
zåḏon	‘insolence’	*ṣimmåʾon*	‘thirsty ground’
zeḏonim	‘running high (m.pl.)’	*ṣipōʿoni*	‘viper’
zikkåron	‘remembrance’	*qaḏmonå*	‘eastern (f.sg.)’
ḥɛḇyon	‘veil’	*qaḏmoni*	‘eastern (m.sg.)’
ḥåzon	‘vision’	*qiṣonå*	‘outermost (f.sg.)’
ḥizzåyon	‘vision’	*qiqålon*	‘disgrace’
ḥiṣon	‘outer’	*qålon*	‘dishonour’
ḥallon	‘window’	*qillšon*	‘trident’
ḥɛsron	‘want’	*rišon*	‘first (m.sg.)’
ḥippåzon	‘haste’	*šåʾon*	‘waste’
ḥarḇone	‘heat (construct)’	*šåʾon*	‘din’
ḥåron	‘heat, anger’	*šibbåron*	‘breaking’
ḥɛrmonim	‘holy places’	*šabbåṭon*	‘sabbatical’
ḥɛšbon	‘account’	*šiggåyon*	‘dirge?’
yåḡon	‘grief’	*šiggåʿon*	‘madness’
yiddʿoni	‘soothsayer’	*šiddåp̄on*	‘scorching’
yeråqon	‘paleness’	*šikkåron*	‘drunkenness’
yšimon	‘wilderness’	*šilṭon*	‘mastery’
yiṯron	‘profit’	*šalmonim*	‘gifts’
kiḏon	‘dart’	*šimmåmon*	‘horror’
killåyon	‘annihilation’	*širyon*	‘coat of mail’
kiššålon	‘stumbling’	*taḥton*	‘lower (m.sg.)’
kišron	‘skill’	*tiḵon*	‘middle (m.sg.)’
låṣon	‘boasting’	*timmåhon*	‘astonishment’

example. That this must have been an early, pre-Proto-Canaanite development, is shown by the fact that the *piʿel* has an infinitive absolute *qaṭṭol*, which must have been innovated when the perfect of this stem still had an *a in its first syllable, i.e. *qaṭṭila (for this reconstruction and dating, see Huehnergard 1992). The analogy could then be formulated as *qaṭVla (*qal* perfect) : *qaṭōlum[5] (*qal* infinitive absolute) = *qaṭṭila (*piʿel* perfect) : *qaṭṭōlum (*piʿel* infinitive absolute). Two separate forms are attested for the *niphʿal*: *niqṭol* and *hiqqåṭol*. *niqṭol* can be the result of a similar analogy to the one that created *qaṭṭol*. *hiqqåṭol*, however, must be based on the perceived relationship between this newly created *piʿel* infinitive absolute *qaṭṭol* and the infinitive construct, *qaṭṭel*. Formally, the analogy would be *qaṭṭel* (*piʿel* infinitive construct) : *qaṭṭol* (*piʿel* infinitive absolute) = *hiqqåṭel* (*niphʿal* infinitive construct) : *hiqqåṭol* (*niphʿal* infinitive absolute).

The *niphʿal* shows more effects of the Canaanite Shift. In the perfect *niphʿal* of II-wy roots, the same sound law that changed *maqWalum nouns to *maqālum resulted in *naqWala > *naqāla. In Canaanite, this *ā then shifted to *ō, resulting in Biblical Hebrew *nåḵon* 'it was established' from *kwn* and similar forms. The imperfect also has *o*, e.g. *yikkon* 'it will be established', but this is not the phonetically regular form. Rather, it is an analogical creation, based on the corresponding forms of II-geminate verbs; as these verbs regularly developed to have the same stem in the *niphʿal* perfect, e.g. *naᵗsbabū > *naᵗsabbū > *nåsábbu* 'they turned', and imperfect, e.g. *yinᵗsabibū > *yinᵗsabbū > *yissábbu* 'they will turn', they offered a model for the extension of the perfect stem, e.g. *nå-ḵon*, to the imperfect, e.g. *yik-kon* (Suchard forthcoming).

Finally, there is the *-o-* which appears between the perfect endings beginning with a consonant (first and second person) and a heavy stem[6], as in the *niphʿal* and *hiphʿil* of II-wy and geminate roots, as well as the *qal* of geminate roots: *nḇunóṯi* 'I had understanding' from *byn*, *hăqimóṯi* 'I erected' from *qwm*, *sabbóṯi* 'I turned' from *sbb*, etc. While Bauer & Leander (1922: 430) say this vowel originated in III-w roots and was transferred to the geminate and II-wy classes by analogy, no traces of this supposed *-aw- > *-o-* remain in the III-wy conjugation, and it is preferable to connect it with the /-ā-/ found in the Akkadian stative conjugation, e.g. /pars-ā-ku/ 'I am cut' (Blau 2010: 209).

[5] Or *qaṭālum, depending on whether the Canaanite Shift had already taken place.

[6] I.e. a stem ending in a historically long vowel and a consonant, like *hăqim-* 'erected' (pf.), or ending in two consonants, like *sabb-* 'turned' (pf.).

Miscellaneous

A few nouns which appear to have undergone the Canaanite shift remain, belonging to patterns that have not yet been discussed, both isolated and derived. Of these, *śmol* ‘left’, spelled <šmʾl> and <šmʾwl> with a silent *ʾǻlɛp̄*, is the only one with cognates that make a reconstruction with *ā probable, although the precise form remains uncertain, cf. Syriac *smālā*, Ugaritic <šmal>, Arabic *šimālun* and *šamʾalun*, Akkadian /šumēlu/. Bauer & Leander (1922: 484) attribute the strange spelling to an interchange between two pronunciations: something like *śamʾal, as reflected in the consonantal spelling, and *śimāl, resulting in the traditional pronunciation, *śmol*. Whatever the actual origin of this strange word may be, its vocalized cognates reflect *ā and not *u corresponding to the Biblical Hebrew *o*, so we may assume that this *ḥolem* is the result of the Canaanite Shift.

ʾɛškol ‘grape’ seems to go back to *ʾiṯkālum, as evidenced by Jewish Babylonian Aramaic *ʾiṯkålå* and Arabic *ʾiṯkālun*,[7] but the strange variation in attested forms (Aramaic also has *sgōlā*, Arabic also has *ʿiṯkālun* ‘date stalk’) and the interchange between reduction and non-reduction of the *o* in the Biblical Hebrew plural *ʾaškoloṯ* / *ʾɛškloṯ* show that this is probably a loanword.

ʿolåm ‘eternity’ has many apparent cognates showing the reflex of *ā in the first syllable: Aramaic and Gəʿəz *ʿālam*, Arabic *ʿālamun*, all meaning ‘world’. As Fox (2003: 289–290) notes, however, there are two reasons not to reconstruct it as *ʿālamum. First of all, the Gəʿəz and Arabic words are both probably loanwords going back to Aramaic, which might itself have borrowed it from Hebrew with a change of *ō to *ā based on an intuitive understanding of Hebrew–Aramaic sound correspondences. Secondly, *ʿālamum would be the only reconstructible Proto-Semitic word of a *qāṭalum pattern, indeed, the only nominal with a long vowel in the first syllable other than the *qāṭilum participles. As no convincing etymology of *ʿolåm* has yet been found (for an overview of the possibilities, see Jenni 1953), the word cannot be used as evidence for the Canaanite Shift.

There are a few II-wy verbs that have an *o* in the perfect. Of these, *ṭoḇ* ‘to be good’ and *ʾor* ‘to be(come) light’ are probably secondary forms, based on the nominals *ṭoḇ* ‘good (m.sg.)’ and *ʾor* ‘light’ discussed above. *boš* ‘to be ashamed’, on the other hand, is probably an old verbal formation, which also has an Akkadian cognate with the same meaning, /bâšu/. As it is a stative verb, it should probably be

[7] Also compare Ugaritic <uṯkl> with a different vowel in the first syllable.

reconstructed as *bawuṯa, Biblical Hebrew *o* then being the result of a contraction of the triphthong *awu (see chapter 5).

In the imperfect, *boš* also has a *ḥolem*, as in *yeḇoš* 'he will be ashamed', as does *bå* 'to come', as in *yåḇo* 'he will come'. As *boš* is a stative verb, it should have originally had a *yiqṭalu imperfect: *yibwaṯu. This then underwent the same *CWV > *CV̄ sound change as the *maqWalum > *maqālum nouns (Brockelmann 1908: 186), resulting in *yibāṯu, a form paralleled by Arabic 'hollow alif' imperfects such as *yanāmu* 'he sleeps' from *nwm* (Fischer 2002: 166). This *ā then underwent the Canaanite Shift, ultimately resulting in *yeḇoš*. Note that the vowel of the prefix is probably secondary: *yibāṯu should properly yield **yḇoš*, with the *i being lost in an open syllable before a long vowel as in *ḏirāʿum 'arm' > *zroăʿ* (see section 4.4). *yåḇo* 'he will come' and similar forms from the same paradigm, which is much more common than that of *boš* 'to be ashamed', probably regularly go back to *yabwaʾu etc. > *yabāʾu. We might expect an *i in the prefix, i.e. *yibwaʾu, due to the Barth–Ginsberg Law (e.g. Joüon & Muraoka 2009: 118), but the *a vowel in the stem is secondary in this verb due to the laryngeal third radical (Brockelmann 1908: 613).

The identification of *u* as the regular outcome of *ō in non-word-initial unstressed syllables, prompted by Bergsträsser (1918: 145; see above), allows us to suggest two more examples of the Canaanite Shift in the verbal system. As will be argued in chapter 8, the first person plural perfect ending and the formally identical first person plural pronominal suffix should be reconstructed for Proto-Northwest-Semitic as *-nā, as reflected by Biblical Aramaic *-nå*; the formal identity with the Classical Arabic cognate makes it likely that this was the inherited form of the suffix. This *-nā then seems to have shifted to *-nō due to the Canaanite Shift, and further to *-nū > *-nu* in this unstressed, non-initial syllable. As the suffix was rarely stressed (only when pronominal suffixes were attached to the perfect ending), this unstressed reflex was preserved and generalized. The same may well have happened to the third person feminine plural perfect ending, which is to be reconstructed as *-ā, cf. Biblical Aramaic *-å*, Gəʿəz *-ā*, and Akkadian /-ā/. The same chain of sound changes that affected *-nā regularly changed *-ā > *-ō > *-ū, merging the suffix with the inherited third person masculine plural perfect ending *-ū. Hence, Biblical Hebrew has *-u* as the third person plural perfect ending in all cases, having lost its gender distinction.[8]

[8]That the merger of the third person plural masculine and feminine perfect forms was due to this merger of their endings as per the Canaanite Shift was suggested to me by Dr. A. Al-Jallad.

Biblical Hebrew has a few pronouns with *o* where other languages have reflexes of *ā. First, there is the personal pronoun *ʾånoḵi* 'I' < *ʾanāku, cf. Akkadian /anāku/. Additionally, there is the relatively rare demonstrative pronoun *zo*. This can be connected with the accusative of the not-quite-grammaticalized Arabic *ḏū* (nom.) / *ḏī* (gen.) / *ḏā* (acc.) 'one of, owner of'. The other cases of this word also have Biblical Hebrew reflexes: the nominative *ḏū resulted in the (also rare) demonstrative and relative pronoun *zu*, and the genitive *ḏī yielded the quite common masculine demonstrative and relative pronoun *z*ɛ. The feminine counterpart of this latter form, *zoṯ*, is spelled <zʾt>, as if it were from *ḏaʾtu (see below), but it is more probably the accusative *ḏā with a feminine suffix added, as in Arabic *ḏātu*, Gəʿəz *zātti* with an additional deictic element *-ti*, and probably Ugaritic <dt>. All of these languages would have preserved *ʾ, had it been present in this form.

A similar case to that of *zoṯ* is found in the negative adverb *lo* <lʾ> 'not'. The Biblical Hebrew spelling and the Arabic dialectal form *laʾ* (Brockelmann 1908: 499) suggest reconstructing it as *laʾ, but that *lā is the more original form is shown by the reflex *lā* in Classical Arabic and Aramaic (where *laʾ should have yielded **lē*, Beyer 1984: 138) and the spelling as prefixed <l-> without <ʾ> in the Old Aramaic of Tell Sfire and other inscriptions (ibid., 615), as well as the Ugaritic spelling <l>, reflecting a form without *ʾ.

Finally, there are the adverb *ko* 'thus' and the preposition *kmo* 'like, as', seemingly a longer form of proclitic *k-* 'idem'. The latter should be reconstructed as *ka-mā, cf. Aramaic *kmā*, Arabic *kamā*. This would then be the proclitic preposition *ka- which has been extended with *mā, unattested in Biblical Hebrew besides a few prepositional forms but possibly related to Arabic *mā* 'what' (although the latter should probably be reconstructed as *mah, see below). *ko* 'thus' has sometimes (e.g. Brockelmann 1908; Bauer & Leander 1922; Blau 2010) been connected with the first part of Biblical Hebrew *kǻḵå* 'idem' and equated with Biblical Aramaic *kå* 'here' and Akkadian /kâ/ 'thus', a byform of /kīam/ 'idem'. Koehler & Baumgartner (1994–2001: 461), however, reconstruct it as *ka-hu, i.e. 'like it', which does match the meaning better than the proposed Aramaic cognate.

3.3.2 *aʾ > *o*

Occasionally, the letter *ʾǻlɛp* is used to indicate a vowel that surfaces in Tiberian Hebrew as *o*. In some cases, this reflects a historical sequence of *aʾ, which then

developed to *ā > *ō, i.e. the *ʾ was dropped with compensatory lengthening of the *a, and this long *ā then underwent the Canaanite Shift.

Nouns

Two nouns spelled with *ʾālep̄* and pronounced with *ḥolem* can be shown to have contained an *aʾ sequence due to cognate evidence: *roš* 'head' < *raʾsum, cf. Ugaritic <riš>, Arabic *raʾsun*, Gəʿəz *rəʾs*; and *ṣon* 'sheep and goats' < *ṣaʾnum, cf. Arabic *ḍaʾnun*, Akkadian /ṣēnu/.

The spelling of *noḏ* 'skin bottle' as <nʾd> suggests a reconstruction as *naʾdum. There are no cognates unambiguously attesting the *ʾ, however, while Akkadian /nādu/ 'waterskin' does not show the expected e-colouring of *a in nouns containing a guttural and a resonant, like *ṣaʾnum > /ṣēnu/ 'sheep and goats' (Huehnergard 2013: 458–460). As the precise conditioning of this Akkadian sound change remains unclear, though, it is uncertain whether this word should be reconstructed as *naʾdum or *nādum.

bor 'cistern' is usually spelled with a *wåw*, not with an *ʾālep̄*, but there are two attestations in one verse (Jer 2:13) of a plural *boroṯ* spelled <bʾrwt>, and the original presence of an *ʾ is strongly suggested by its occurrence in the related noun *bʾer* 'well'. Possibly, the usual spelling of *bor* with *wåw* was purposefully chosen to prevent confusion with *bʾer*. Perhaps, then, *bor* should be reconstructed as *baʾrum, similar to the words above. Alternatively, this word may go back to *buʾrum, a possibility which is strongly supported by the Akkadian cognate /būru/. Blake (1951: 250) suggests that sequences of *uʾ originally yielded *ō, which would result in Biblical Hebrew *ḥolem*, but in most cases, the *ʾālep̄* that had been retained in spelling was hypercorrectly reintroduced in the pronunciation, resulting in *ʾo: thus *muʾdam 'very' > *mōd >> *mʾod > Biblical Hebrew *mʾoḏ*.[9] This restitution of the *ʾ could not have taken place in *bor*, as it was not spelled with an *ʾālep̄*, and so the regular outcome of *buʾrum remained unchanged.

Another word that is spelled with *wåw* but which probably contained a *ʾ is *moser* 'bands'. As it appears to be a *maqṭilum instrument noun of the root *ʾsr* 'to bind', it should be reconstructed as *maʾˢsirum. An opposite example of non-etymological <ʾ> is found in *mozn̊áyim* 'balance, scales', spelled <mʾznym>. The word should be reconstructed as *mawᵈzinayma, as is attested by the lack of *ʾ in Ugaritic <mznm>. It is probably derived from a root that is not attested

[9] And similarly, *biʾrum 'well' > *bēr >> Biblical Hebrew *bʾer*.

in Biblical Hebrew, but is cognate with Arabic *wzn* 'to bear (a load)' (Koehler & Baumgartner 1994–2001: 539). Since this root is lacking in Hebrew, the word could have undergone folk etymology linking it to *ʾózɛn* 'ear', which would explain the spelling with *ʾǻlɛp̄*.

The origin of *poro̲t̲* 'shoots', spelled with *ʾǻlɛp̄*, is unclear, and so is its reconstruction (Koehler & Baumgartner 1994–2001: 909).

Verbs

The existence of one class of weak verbs in Biblical Hebrew is completely due to the operation of this change of *aʾ > *ā > *ō. These I-ʾ verbs have an *o* as the prefix vowel in the imperfect, e.g. *yo̲b̲du* <yʾbdw> 'they will be lost' < *yaʾbudū. Many I-ʾ verbs have analogically restored the consonantal *ʾ, leaving only a number of frequent verbs in this category, viz. *ʾbd* 'to be lost, perish', *ʾby* 'to permit', *ʾḥz* 'to seize', *ʾkl* 'to eat', *ʾmr* 'to say' and *ʾpy* 'to bake'. *ʾhb* 'to love' has only preserved the result of the sound change in the first person singular (*wå*)*ʾohab̲* '(and) I loved' and similar forms.

3.3.3 *ā > *å*

*qāṭum

sās 'moth' would seem to go back to *ᵗsāᵗsu, as supported by Syriac *sāsā* and Akkadian /sāsu/, but Arabic *sūsun* 'moth-worm' and Gəʿəz *ṣāṣe* 'moth, worm' show that both the vowel and the consonants exhibit irregular correspondences. The word was probably borrowed into all these languages from an unknown source, and it could have reached Hebrew after the Canaanite Shift had stopped operating, or simply as *sas-. Another option is that Hebrew borrowed it from Aramaic or Akkadian; or again, the different words may be onomatopoeic.

ʿåb̲ 'cloud' retains its *å* in the construct state plural, *ʿåb̲e*. As it is associated with the II-y root *ʿyb*, however, we may reconstruct it as *ʿayabum, rather than *ʿābum.

Another possible *qāṭum noun is *tå* (spelled <tʾ>) 'guard chamber'. That the *å* is originally long is shown by the construct state plural *tåʾe* and by the Akkadian cognate /tāʾu/ 'room'. Interestingly, the Aramaic cognates of this word have a *w* as the second radical, e.g. Syriac and Jewish Babylonian Aramaic *tawwānā*. This suggests that the word, at least as it appears in Hebrew and Akkadian, should be reconstructed as *tawaʾum, which would regularly yield the attested forms.

Finally, there are the active participles of II-wy verbs like *qåm* ‘standing’. Like *ʿåḇ* and *tå*, they retain their *qǻmɛṣ* in positions where originally short *a would undergo reduction, as in the construct state plural *qåme*. This historically long vowel should not be reconstructed as *ā, though, but as the result of a contracted triphthong *awa or *aya (see chapter 5). Thus, these participles are formally equivalent to *qaṭalum adjectives like *ḥåḏåš* ‘new’ or *yåråq* ‘green’ (Fox 2003: 162).

*qVṭālum

kråʿáyim ‘shins’ has cognates which attest to an *ā in the original second syllable: Syriac *krāʿā*, Arabic *kurāʿun*. The word is also attested in a different form in Gəʿəz *kʷərnāʿ* ‘elbow, forearm’ (< *kurnāʿ, possibly metathesised from *kurʿān, cf. Yemeni Arabic *kirʿān*; Leslau 1987) and Akkadian /kurītu/, perhaps < *kuriʿtum.

ʿånån ‘cloud cover’ would seem to go back to *ʿanānum, as evidenced by Aramaic *ʿnānā* and Arabic *ʿanānun*. While there are few unambiguous Biblical Hebrew forms, though, the word apparently behaves like a *qaṭalum noun, as is seen from the construct state *ʿănan*, and many authors simply treat it as such. Fox (2003: 163) notes that there are several semantically related *qaṭalum nouns, like *båråḏ* ‘hail’, *båråq* ‘lightning’, and *måṭår* ‘rain’. The semantic association with these words may have prompted the shift of *ʿanānum to a *qaṭalum pattern, yielding *ʿananum.

Blau (1996: 27) suggests that *ʾănåšim* ‘men’ was originally the plural of *ʾĕnoš* ‘man, mankind’, in which case it would go back to *ʾVnāsīma and would have preserved its *ā as *å*. The construct state *ʾanše*, however, clearly shows that the stem should be reconstructed as *ʾVnas-, not as *ʾVnās-, which would have yielded **ʾănåše* in the construct state; Blau sees *ʾanše* as a secondary, analogical form, but it seems more prudent to see it as reflecting *ʾinas-, the regular plural stem of *ʾiš* ‘man’ < *ʾins-, with Dolgopolsky (1999: 161–162).

*qaṭṭālum

A relatively common category of nouns which is often reconstructed with an *ā > Biblical Hebrew *å* is *qaṭṭål*, consisting of nouns and adjectives expressing professions or habitual characteristics. The attested words are listed in table 3.7. At first sight, these words would seem to be derived from a *qaṭṭālum pattern, as reflexes of that pattern with very similar semantics are attested in many other

Table 3.7: *qaṭṭål* habitual agent nominals

BH	meaning	BH	meaning
gannåḇ	'thief'	*sallåḥ*	'forgiving (m.sg.)'
dawwåy	'faint (m.sg.)'	*såråḇim*	'obstinate (m.pl.)'
dayyåḡim	'fishermen'	*ʿawwål*	'ill-doer'
dayyån	'judge'	*påråš*	'horseman'
ḥabbårim	'partners'	*ṣawwår**	'neck'
ḥaṭṭåʾim	'sinful (m.pl.)'	*ṣayyåḏ*	'hunter'
ḥallåš	'weakling'	*qallåʿim*	'slingers'
ḥåråš	'artisan'	*qannå*	'jealous (m.sg.)'
ṭabbåḥ	'bodyguard'	*qaššåṯ*	'archer'
kɛḥåšim	'lying' (m.pl.)	*raggåz*	'excited (m.sg.)'
naggåḥ	'prone to gore (m.sg.)'	*rakkåḇ*	'charioteer, horseman'
sabbål	'bearer'	*raqqåḥim*	'ointment mixers'

*Spelled <ṣwʾr>, perhaps to distinguish it from *ṣur* <ṣwr> 'rock'; possibly derived from a supposed root *ṣwr* 'to turn', thus originally 'turning' (Koehler & Baumgartner 1994–2001: 1009).

branches of Semitic, e.g. Aramaic *gannāḇā* 'thief', Arabic *ḡabbāzun* 'baker', Gəʿəz *ʾaggār* 'pedestrian', and Akkadian /nappāḫu/ 'smith' (Fox 2003: 253–261).[10] It is not certain, however, that the Biblical Hebrew pattern should actually be reconstructed as *qaṭṭālum, as these words often seem to behave as if their second syllable contains a historically short vowel, as in *qaṭṭalum. In the construct state, for instance, the *qåmɛṣ* becomes a *páṯaḥ*, e.g. *dayyan* 'judge (construct)'. We might expect an original *ā to stay long, and thus yield **å*, even when unstressed.[11] The existence of a Proto-Semitic class of *qaṭṭalum nominals with these semantics is supported by evidence from Assyrian. In this dialect (or rather, collection of dialects) of Akkadian, *a in open syllables assimilated in quality to the following vowel's syllable, resulting in stem-internal vowel alternations as in /qaqqudu/ 'head' (nom.), /qaqqidi/ (gen.), /qaqqada/ (acc.), all from *qaqqad- (Von Soden 1995: 15). This phenomenon also occurs in a class of nouns and adjectives with the semantics we are currently concerned with: for example, the assimilation of the second vowel in /šarruqū/ (nom.), /šarreqē/ (gen./acc.) 'thieves' shows

[10] For *ṣawwår* 'neck', however, note the Aramaic cognates reflecting short *a: Syriac *ṣawrā*, Biblical Aramaic *ṣawwreh* 'his neck'.

[11] Although the construct state of words ending in the suffix *-ån* (see below) does change it to *-an*, e.g. *qɔrban* 'offering (construct)'; this must go back to *-ānum, as no *-anum suffix is attested.

Table 3.8: *-ån* nominals

BH	meaning
birånіyyoṯ	‘fortresses’
binyån	‘building’
dårḇån	‘goad’
kiḇšån	‘oven’
niṣṣånim	‘blossoms’
ʿinyån	‘task’
qinyån	‘property’
qɔrbån	‘offering’
šulḥån	‘table’
šinʾån	‘highness’
širyån	‘scaly mail’

that it was short, i.e. the word is a *qaṭṭalum noun (Huehnergard 1992: 223, n. 59). Problematically, the few attested construct state plural forms of these nouns in Biblical Hebrew show retention of the *å*, which is unexpected for short *a: *ḥaṭṭåʾe* ‘sinners (construct)’, *ḥåråše* ‘artisans (construct)’, *ṣawwåre* ‘necks’ (construct)’ (but *ṣawwroṯeḵɛm* ‘your necks’ with reduction of the *a). Perhaps the strong resemblance of this Hebrew class of words to Aramaic *qaṭṭālum nouns led bilingual speakers to reinterpret these words as if their second vowel was historically long, giving rise to new, analogically preserved *å* vowels in the construct state plural, one of the few forms in which a difference between *ā and *a would be visible and an infrequent form at that. Of course, the forms that have been used to argue for a reconstruction as *qaṭṭalum with a short *a, viz. the construct state singular forms like *dayyan* ‘judge’ and *ṣawwroṯeḵɛm* ‘your necks’, could also be the result of analogy. Still, the possibility that these words did not originally contain a long *ā renders them unfit for use as evidence about the conditioning of the Canaanite Shift.

*-ānum

Table 3.8 lists words in which the common *-ānum suffix appears as *-ån*. Some words have been excluded from the table as it is unclear whether they are common nouns or proper nouns, such as *liwyåṯån* (Leviathan) and *nḥuštån* (Nehushtan),

or because their meaning and etymology are unclear, such as *ḥammån* 'incense stand?'.

While *-ānum usually appears as *-on* in Biblical Hebrew, the quality of the vowel remained unchanged in its relatives, such as Aramaic, and many of the words in table 3.8 have been suspected to have been borrowed from that language. Wagner (1966) lists *birånіyyoṯ* 'fortresses', *binyån* 'building', and *ʿinyån* 'task' as Aramaic loanwords; *binyån* is stated to derive from *bunyānu (cf. Arabic *bunyānun*), with the dissimilation of *bu > *bi which – in his opinion – was regular in Aramaic, but not in Hebrew. The conditioning of this dissimilation in Biblical Hebrew will be investigated below, but given the word's semantics, which make it prone to borrowing, and broad attestation in Aramaic, we may unproblematically regard it as a loanword. Similarly, *dårḇån* 'goad' looks decidedly un-Hebrew: it is not connected with an attested Hebrew root, and the unreduced *å* in the first syllable is reminiscent of the Aramaic *qal* active participle, *qāṭel*, as Bauer & Leander (1922: 500) note. The attested plural, *dårḇonoṯ* 'goads', may have adopted the more common Biblical Hebrew form of the *-ānu suffix. Incidentally, these two forms of the word show an alternation between stressed *ǻ* and unstressed *o*, contrary to what the supposed stress-based conditioning of the Canaanite Shift would predict.

kiḇšån 'oven' and *širyån* 'scaly mail', finally, are of unclear origin. *kiḇšån* is often interpreted as 'kiln' and derived from the root *kbš* 'to subdue, to rape'. The kiln would then be that in which ore is subdued. This derivation seems a bit far-fetched, especially since the other attested Biblical Hebrew *qiṭlānum nouns have a passive meaning or are action nouns; thus, *qinyån* 'property' is that which is acquired (*qny*), *ḥɛšbon* 'account' is either that which is accounted (*ḥšb*) or the act of accounting, etc. *kiḇšån*, then, should be **'that which is subdued' or **'the act of subduing', not 'that which subdues'. In fact, Mishnaic Hebrew attests the word *kiḇšon* 'secret', which is a much better fit for the expected meaning 'that which is subdued'. As we cannot be sure where *kiḇšån* comes from, we cannot know whether its *qǻmɛṣ* derives from an earlier *ā or not.

širyån 'scaly mail', which is also attested as *širyon* and *siryon*, cannot be connected with a known root, and the interchange between *šin* and *såmeḵ* is very suspect. We are probably dealing with a loanword, although the source remains unknown. *šulḥån* 'table', too, is of uncertain origin. Thus, most of the *-ån* nominals must be discarded, and we are left with *niṣṣånim* 'blossoms', *qinyån* 'property', *qɔrbån* 'offering', and *šinʿån* 'highness'.

Table 3.9: Possible *mVqṭālum nouns with preserved *å*

BH	meaning
moṣåʾe	‘exits (construct)’
moråše	‘desires? (construct)’
maṭṭåʿe	‘planting places (construct)’
makkårehɛm	‘their clients?’
miqråʾe	‘convocations (construct)’

*mVqṭālum

As was discussed above, there are a few attestations of Biblical Hebrew *mVqṭālum nouns. While the absolute state singular of these nouns would be indistinguishable from *mVqṭalum nouns if they did not undergo the Canaanite Shift, as both patterns would have merged in *mVqṭål*, there are several words which preserve their *qǻmɛṣ* in unstressed, non-pretonic syllables, which may indicate the presence of an *ā as the original vowel; the relevant forms are listed in table 3.9. Note that all of the words except for *moråše* ‘desires? (construct)’ have a guttural or *reš* as their third radical. As *mVqṭalum nouns occasionally undergo seemingly secondary gemination of the third radical in the plural, as in *maḥšå̱k̲* ‘dark place’, plural *maḥšakkim* (absolute) / *maḥšakke* (construct), or *mɛrḥåq* ‘distance’, plural *mɛrḥaqqim* (absolute) / *mɛrḥaqqe* (construct), these apparent *mVqṭālum nouns listed in table 3.9 could also go back to *mVqṭalum nouns with a geminated third radical in the plural, which was then regularly degeminated with compensatory lengthening of *a > *å* in Tiberian Hebrew.

Additionally, the *mVqṭālum or *miqṭulum noun *mišṭoăḥ* ‘spreading place’ (for nets) has the construct state *mišṭaḥ*. This could indicate a stress-conditioned alternation between *mVqṭṓl (absolute) and *mVqṭāl (construct), but this alternation is regular if the word is to be reconstructed as a *miqṭulum noun: absolute *misṭúḥum > *mišṭṓḥ (with tonic lengthening, see chapter 4) > *mišṭoăḥ* (insertion of *pa̱ṭaḥ furtivum* between the historically long non-a vowel and syllable-final guttural), while the construct state is *misṭuḥu > *mišṭoḥ (no tonic lengthening in the construct state) > *mišṭaḥ* (with assimilation of the historically short non-a vowel before the syllable-final guttural).

Miscellaneous

There are two nouns of reduplicated patterns that seem to have an *ā preserved as *å*. *ṣɛʿĕṣåʿim* 'offspring' has the construct state *ṣɛʿĕṣåʿe*, but this *å* could be the result of compensatory lengthening after degemination of the *ʿ, in which case this word would be a *qVṭqattum reduplicated form with gemination of the last radical, similar to *taltallim* 'date blossoms'. As in the imperative and infinitive construct, the first radical of this root, *yṣʾ* 'to go out', has been left off. Another reduplicated word is *ṣapṣåpå* 'willow', only attested once in that form. Its Arabic cognate *ṣafṣāfatun* contains an *ā, which might be the case for the Biblical Hebrew word, too. As names of flora and fauna are frequently borrowed, however, *ṣapṣåpå* cannot securely be used as evidence of the non-occurrence of the Canaanite Shift.

Two nominals remain. Besides the single attestation of the place name *tošåḇe gil*ʿåḏ* in 1 Kings 17:1, which is textually uncertain,[12] *tošåḇ* 'resident alien' has no attested forms which would clearly differentiate between an *ā and an *a in the second syllable, but the Syriac cognate *tawtāḇā* must go back to *tawṯābum. Then, there is *śmåli* 'left (m.sg.)', the adjective belonging to the noun *śmol* 'left' discussed above. As was mentioned, the precise reconstruction of *śmol* is unclear, but its *o* can be assumed to have derived from *ā. Many scholars (e.g. Blau 2010: 48) reconstruct *śmåli* with an *ā as well and see this interchange between *o* and *å* as evidence of the stress-based conditioning of the Canaanite Shift. An alternative would be that *śmåli* is derived from a different word for 'left', such as the ancestor of Arabic *šamʾalun*, which is attested besides the form that is more easily connected with Biblical Hebrew *śmol*, viz. Arabic *šimālun*. Interestingly, a similar discrepancy between noun and adjective is found in the words for 'right': the noun is *yåmin* < *yamīnum, cf. Arabic *yamīnun*, but the adjective is *ymåni*. In this case, a motivation can be found for deriving a separate adjective form, as the expected form *ymini* had acquired the more specific meaning 'Benjaminite'. As is the case for 'left', Arabic attests a cognate that could have given rise to the adjective for 'right': Arabic *yamanun* 'right' should go back to *yamanum, also reflected by Akkadian /imnu/. This form could be combined with the derivational suffix *-īyum to form *yamanīyum, resulting in *ymåni*. Since it is quite likely that the words for 'left' and 'right' influenced each other through contamination, there are a few different scenarios for the origin of *śmåli* and *ymåni*. *śmåli* could either

[12] For *mittošåḇe gil*ʿåḏ* in the Masoretic Text, the Septuagint reads ἐκ θεσβων τῆς γαλααδ; together with the derived adjective *tišbi*, this points to **tišbe gil*ʿåḏ* as the more original vocalization.

be the regular outcome of *śim(ʾ)ālīyum, or of *śamʾalīyum, or it could have been influenced by an independently formed *ymåni*. The latter, in turn, could be the regular outcome of *yamanīyum, or it could have been contaminated by *śmåli*. None of these explanations seems inherently preferable over the others, so we cannot, for now, be sure about the origin of the *å* in *śmåli*.

Brockelmann (1908), Bergsträsser (1918), and Bauer & Leander (1922) each view the presence of *å* rather than *o* in II-wy and III-wy verbs like *qåm* 'he stood' and *råṣå* 'he was pleased' as something that warrants explanation, as Aramaic (*qām*, *rʿā*) and Arabic (*qāma*, *raḍā*) have *ā* here. Brockelmann (1908: 142) attributes this non-operation of the Canaanite Shift to the fact that these verbs did not bear phrasal stress, while Bauer & Leander (1922: 192) take these verbs to be examples of the 'younger stratum' of Hebrew, which did not undergo the Canaanite Shift at all; Bergsträsser simply admits that the forms are unexplained. As noted above, however, Birkeland (1940: 41–46) convincingly argues that these instances of *ā* go back to earlier *awa and *aya, which were only contracted in the individual languages (or not at all, cf. Gəʿəz III-wy forms like *fatawa* 'he desired' and *bakaya* 'he cried'; see chapter 5). In Canaanite, this only took place after the operation of the Canaanite shift, so these words did not have an *ā when it could have changed to *ō.

The pronominal suffixes *-k̲å* (2m.sg.) and *-hå* (3f.sg.) have also been the subject of much discussion. The length of their vowel, as well as that of the other second and third person pronominal suffixes and several other words, such as the independent personal pronoun *ʾattå* 'you (m.sg.)', varies between and even within separate Semitic languages; for variation within Biblical Hebrew, cf. *ʿålɛ́k̲å* 'on you (m.sg.)', *ʿålɛ́hå* 'on her', but *låk̲* 'to you (m.sg.)' (pausal form), *låh* 'to her'. Brockelmann (1908) and others after him have tried to resolve this issue by stating that originally long, word-final vowels were phonetically not quite long or short, but anceps, i.e. something in between. This problem is investigated in depth in chapter 8, where the conclusion is reached that the word-final *-å* in these forms does not reflect historical *-ā, and accordingly, they do not constitute counterexamples to the Canaanite Shift.

Another unexpected *qǻmɛṣ* is found in the *-å* ending of the cohortative (e.g. *ʾelk̲å* 'I would like to go') and long imperative (e.g. *lk̲å* '(please) go'); these forms, too, are discussed in chapter 8. In brief, Moran (1960) shows that a similar form to the cohortative is used in the Amarna letters and links it to the Arabic subjunctive

yaqṭula, with short *-a; this *-a was protected from the loss of word-final short vowels by the frequently attached precative particle *-nå* (Blau 1977).

Brockelmann (1908) holds that the Canaanite Shift was not only conditioned by word stress, but also by phrasal stress. In this way, he explains the difference between *ko* and *kå̱kå* 'thus', which he reconstructs as *kā and reduplicated *kākā, as well as the difference in vocalism between the *-mo* in *kmo* 'as' and *må* 'what', which would then both come from *mā. As we have seen above, *ko* should rather be reconstructed as *ka-hu, literally 'like it'. *kå̱kå* might then be a similar form, with the second person suffix instead of the third person, i.e. *ka-ka 'like you', perhaps 'like this', contrasted with *ka-hu 'like that'. Thus, *kå̱kå* does not necessarily show *ā > *å*. While the *-mo* of *kmo* probably does derive from *mā, *må* is more likely to go back to *mah, cf. Ugaritic <mh>, Arabic (reduplicated) *mahmā* 'whatever' (Blau 2010: 186). The original *h would then be responsible for the usual gemination of the following consonant, which is hard to understand if we reconstruct *mā with a long vowel. Syntagms such as *ma-zzɛ* 'what is this?' should then be reconstructed like *mah-d̲ī.

3.3.4 *a› > *å*

This section is limited to words which may have contained the sequence *a› in an originally closed syllable, as the *› before a vowel was simply preserved until long after the operation of the Canaanite Shift, and often into Biblical Hebrew.[13] Thus, the many examples of III-› verbs ending in *-å*, e.g. *qårå* 'he called' and *yiqrå* 'he will call', will not be discussed, as the elision of their *› is almost certainly a much later development than the elision of *› in syllable-final position; when the Canaanite Shift was operative, they were still pronounced *qara›a, *yiqra›u, etc., and did not contain a long *ā that it could have targeted.

The first and second persons of the perfect of III-› verbs did contain a syllable-final *›, as in *qara›ta 'you called', and this should be expected to have elided, lengthening the *a > *ā in time for it to participate in the Canaanite shift, like that of *ra›sum > *roš* 'head' and others discussed above. The non-occurrence of such expected forms as **qåróṯå*[14], however, is the result of paradigmatic leveling,

[13] In Tiberian Hebrew, › was regularly lost before unstressed vowels, cf. *mi›atáyma > *måṯáyim* 'two hundred', *mal›akátum > *mlå̱kå* 'work'. Cases of Tiberian › before unstressed vowels are the result of analogical restoration based on their retention before stressed vowels.

[14] Punic *corathi* 'I called', attested in the *Poenulus*, is probably a corrupted spelling for /qarṓtī/; this /ō/ tells us nothing about the workings of the Canaanite Shift, though, as it is probably the

based on analogy with the third person forms and the strong verb: *qaṭala (3m.sg. perfect) : *qaṭalta (2m.sg. perfect) = *qaraʾa (3m.sg. perfect) : *qaraʾta (2m.sg. perfect).

Turning to the nouns, there is *ḥaṭṭå̱ṯ* <ḥṭʾt> 'sin(-offering)', derived from the root *ḥṭʾ* 'to sin'. While the word looks like it goes back to *ḥaṭṭaʾtum, it could be a post-Canaanite Shift formation, patterned after other *qaṭṭaltum abstract nouns like *yabbastum > *yabbɛ́šɛ̱ṯ* 'dry land', from the root *ybš* 'to be dry'. Alternatively, the *aʾ could have been restored based on the plural *ḥaṭṭaʾātum, where it would have been retained.

The vocalic alternation seen in *roš* 'head' and its plural *råšim* (absolute), *råše* (construct) might seem to be an example of stress conditioning of the Canaanite Shift, but *råšim* and *råše* did not actually contain a syllable-final *aʾ sequence. As Bauer & Leander (1922: 620) note, these forms are the regular outcomes of *raʾasīma (absolute) and *raʾasay (construct), the expected plurals of the singular *raʾsum. That the plural of this word was formed in this way is supported by the Ugaritic spelling <rašm> 'heads', which probably reflects /raʾašūma/.

This leaves us with the precative particles *ʾǻnnå* and *-nå*, spelled <(ʾ)nʾ>. Unfortunately, their etymologies and reconstructions remain unknown (for a recent discussion, see Hartlieb 2011). Thus, there are no strong examples of syllable-final *aʾ > *ā that was unaffected by the Canaanite Shift.

3.4 Analysis

Reviewing the data, the Canaanite Shift seems to have applied in the great majority of words with *ā. In fact, only seven words unequivocally show the development *ā > *å*. Four of these (*niṣṣånim* 'blossoms', *qinyån* 'property', *qɔrbån* 'offering', and *šinʾån* 'highness') contain the highly productive *-ānum suffix, and are therefore of questionable use in establishing the conditions of the Canaanite Shift: if the *-ān form was preserved in some words or introduced through borrowing from Aramaic (as it certainly was), it could have secondarily spread to words where regular sound laws should have produced *-ōn. The words in table 3.10, then, are the only truly certain examples of *ā > *å*.

result of the much later Phoenician Shift, which changed new instances of *ā > *ō (Friedrich & Röllig 1999: 43).

Table 3.10: *ā > *å*

BH	PNWS	meaning
krå‹áyim	*kurā‹ayna	'shins'
tošåḇ	*tawṯābum	'resident alien'
moråše	*mawrāṯay	'desires? (construct)'

It is striking that two of these words have an *o* in the syllable preceding their *å*. The third one, *krå‹áyim*, should also be reconstructed with a rounded vowel in the syllable preceding the *ā: *kurā‹ayma. It would seem, therefore, that the Canaanite Shift did not apply after rounded vowels, as was already suggested by Brockelmann (1908) on other grounds. Phonetically, this can be understood as a dissimilatory effect of the rounded vowel in the first syllable, which prevented the *ā in the second syllable from shifting to *ō. In the case of *tošåḇ* and *moråše*, where the *o* < *aw, this dissimilatory effect may have been due to the bilabial approximant *w, if the diphthong *aw had not yet been contracted to *ō.

We are now confronted with another problem, however: the words in table 3.11, where the Canaanite Shift has taken place in words with *u reconstructed in their first syllable. Interestingly, all of these words have a bilabial consonant directly preceding or following the *u. In the one word where this vowel has not been reduced in later Hebrew, *rimmon*, this *u has visibly dissimilated to *i*. Elsewhere in Hebrew, we find more cases of the dissimilation of unstressed *u > *i when adjacent to bilabials; a telling example is the preservation of *u in *›úmrum > *›ómɛr* 'saying', but its dissimilation in the non-absolute singular forms of the paradigm, e.g. the construct plural *›umaray > *›imaray > *›imre*, and the associated feminine, *›umrátum > *›imrå* 'idem'. The cases of preserved *u in this position, as in *dubbím̀a > *dubbim* 'bears', can be explained through analogy, in this case with the singular *doḇ* < *dúbbum. Hence, we may postulate a regular dissimilation of *u > *i in this position. Assuming, then, that this dissimilation of *u > *i next to a bilabial consonant took place in all of these words, they no longer contradict the non-operation of the Canaanite Shift after back, rounded vowels: while *kurā‹ayma > *krå‹áyim*, *burāṯum > *birāṯum > *birōṯum > *broš*, etc.

Table 3.11: *qu(ṭ)ṭāl- > *q(iṭ)ṭol*

BH	PNWS	meaning
broš	*burāṯum	'juniper'
ploni	*pulānīyum	'someone'
pṯoṯe	*putātay	'morsels (construct)'
rimmon	*rummānum	'pomegranate'

3.5 Conclusion

We have seen that many supposed exceptions to the Canaanite Shift of Proto-Northwest-Semitic *ā > Proto-Canaanite *ō cannot be reconstructed with *ā at all. Some of these apparent exceptions are loanwords, others are of uncertain etymology, and some can more plausibly be reconstructed with *a or a triphthong like *awa. Once these words are excluded, the Canaanite Shift is regularly seen to apply to the vast majority of the eligible material. Contrary to the position held by Brockelmann (1908) and others, no stress conditioning is needed to explain the few cases where *ā was preserved as *å* – although the occasional development to *ū in non-initial syllables noted by Bergsträsser (1918) was stress-conditioned, only occurring in unstressed syllables. Rather, the Canaanite Shift did not take place in words where *ā was preceded by a rounded vowel or *w in the preceding syllable, which exerted a dissimilatory influence on the vowel in question. In the handful of words where *ā did shift to *ō despite *u in the preceding syllable, we may assume that the adjacent bilabial consonant had caused the dissimilation of this *u > *i before the operation of the Canaanite Shift.

Chronologically, the Canaanite Shift must have preceded the contraction of triphthongs in Hebrew (see chapter 5), as *ā that resulted from earlier *V̆Wa did not shift to *ō. Consequently, the Canaanite Shift also predated the first apocope of word-final short vowels and the loss of mimation (chapter 4). An absolute chronology is somewhat harder to establish. While the Canaanite Shift is attested in all Canaanite languages in which its effects would be visible – almost by definition – we cannot be sure that it took place at the same time in the ancestor of Hebrew as in that of Amarna Canaanite, which already attests its operation in the 14th century BCE. As the Canaanite Shift is one of the first sound changes to have differentiated pre-Hebrew from Proto-Northwest-Semitic, however, it must

predate the beginning of the Hebrew epigraphic record. Presumably, it is to be placed at some point in the second millennium BCE.

4 Stress, tonic, pretonic, and pausal lengthening

4.1 Introduction

Much of Biblical Hebrew's distinctive 'flavour' compared to related languages such as Aramaic and Arabic is the result of three separate processes of vowel lengthening (illustrated in table 4.1). These sound changes are commonly known as tonic lengthening (in stressed syllables), pretonic lengthening (in open syllables immediately preceding the stress), and pausal lengthening (in stressed syllables in utterance-final words). While the latter two are relatively straightforward, the exact nature and conditioning of tonic lengthening has been the topic of debate. Interestingly, this sound law appears to only have operated on nominal forms, while leaving verbs untouched, resulting in striking minimal pairs such as *nišbar* 'it was broken' vs. *nišbår* (< *nišbār) 'broken (m.sg.)', the participle associated with that verb. Tonic lengthening only affecting some morphological categories, as is suggested by these forms, is incompatible with the Neogrammarian requirement that sound change be conditioned by phonetic factors only, motivating numerous attempts to arrive at an alternative explanation.

As the three sound changes that are the subject of this chapter are conditioned by the position of the stress, the chapter's first section will discuss the origin and development of the Hebrew accent system. The discussion of tonic lengthening will

Table 4.1: BH *å* < lengthened *ā for Proto-Semitic *a

Arab.	BA	BH	meaning
ḏahabun	*dhaḇ*	*zåhåḇ*	'gold'
katab	*kṯaḇ*	*kåṯåḇ*	'he wrote (pause)'

then take centre stage, after which a discussion of pretonic and pausal lengthening will be included for the sake of completeness. Given the quantity and quality of previous scholarship on these topics, the evaluation of the existing literature will outweigh the presentation of new suggestions.

4.2 Stress

In the Leningrad Codex, the accented syllable of every prosodic word[1] is marked by a cantillation sign. This accent may be treated as equivalent to word stress. In Biblical Hebrew, stress is phonemic, as can be seen from minimal pairs like *qåmắ* 'standing' vs. *qắmå* 'she stood up', *bånú* 'they built' vs. *bắnu* 'in us'. Based on comparison with related languages and evidence from stress-based sound shifts such as those discussed later in this chapter, a different stress system should be reconstructed for earlier stages of Hebrew. We will review two notable proposals before examining the most plausible hypothesis, which holds that at a certain period, the ancestor of Hebrew regularly stressed the penultimate syllable of every word. Contrary to the transcription used in the rest of the present work, ultimate stress in Biblical Hebrew words will be indicated in the rest of this chapter.

4.2.1 Phonemic stress

Brockelmann (1908) believes that Proto-Semitic had phonemic stress, like Biblical Hebrew. The position of this stress was not always the same in Proto-Semitic and Hebrew; rather, it was often analogically shifted in the development from the former language to the latter. For example, the third person masculine singular and plural (respectively) of the perfect, *qaṭála and *qaṭálū in Brockelmann's reconstruction, resulted in *qaṭál and *qaṭálū after the loss of word-final short vowels. The ultimate stress found in *qaṭál was then extended to the plural, eventually resulting in *qåṭlú* (p. 100). Bergsträsser (1918: 115ff.) similarly reconstructs a system with phonemic stress, albeit a different one.

The most serious objection against these reconstructions is that they are not based on any actually attested stress patterns. The position of the stress is mainly deduced from its supposed effect on surrounding vowels. Brockelmann (1908: 108), for instance, explains the different vocalization of the construct states *zqán*

[1] Except in words with a cantillation sign that is fixed on the first or last letter of the word.

(from *zåqén* 'old (m.sg.)') and *kɛ́t̲ɛp̄* (from *kåt̲ép̄* 'shoulder') as the result of a difference in stress: in the construct state, *zaqínu > *zaqín > *zqán*, while *kátipu > *kátpu > *kɛ́t̲ɛp̄*. No such difference in accentuation between words of the same noun pattern is found in any Semitic language, however, and the reconstruction of the stress is therefore circular: the *i in *katipu was lost because the preceding vowel was stressed, and we know the preceding vowel was stressed because the *i was lost. While this is a permissible way to arrive at information about the proto-language that has not otherwise been preserved, a reconstruction with independent confirmation would be much stronger.

4.2.2 'Classical Arabic' stress

Bauer & Leander (1922: 177ff.) also reconstruct free stress for the oldest stage of Proto-Semitic, but posit an intermediate stage before the Biblical Hebrew stress system came into being. They believe that the stress system of Classical Arabic reflects the final stage of Proto-Semitic. In this system, stress is bound, i.e. its position is determined by syllable structure: the stress falls on the word's last heavy syllable, excepting the ultimate, or on the initial syllable if no heavy syllables occur in the word. Thus, the perfect third person masculine singular was stressed *qáṭala, the second person masculine singular *qaṭálta, the masculine singular participle *qā́ṭilum, the plural *qāṭilíma, etc. Several stress shifts then moved the accent to the stressed syllable attested in Biblical Hebrew.

This reconstruction assumes that Classical Arabic has preserved Proto-Semitic stress, or at least its latest phase. Unfortunately, what is taught as 'Classical Arabic' stress at modern universities is based on only one reading tradition of Classical Arabic, not attested before the seventeenth century (Blau 1972). In the cited paper, Joshua Blau investigates medieval Arabic documents which reflect a quite different stress system from that of 'Classical Arabic'. If the 'Classical Arabic' stress is a late innovation, then, it cannot possibly be held to continue the Proto-Semitic stress.

There is some evidence though, that Ugaritic was stressed according to this system at one point, based on the apparent assimilation of unstressed vowels to following stressed vowels in certain conditions (Huehnergard 2012: 28ff.). For example, *a assimilates to the quality of a following long vowel if the two vowels are separated by a geminate, as in *ṣí-ib-bi-ri* /ṣibbīri/ < *ᵗṣabbīri 'communal plot of land (genitive)' (p. 29), but not to that of a short vowel, as in *šal-li-ma* /šallima/ < *sallima 'it paid' (p. 64). This can be understood as assimilation to a stressed

vowel if Ugaritic followed the 'Classical Arabic' stress system and these words were stressed *ᵗṣabbíri, *sállima. Alternatively, these assimilations could have been conditioned by syllable weight, rather than stress. Furthermore, since these processes took place between Proto-Northwest-Semitic and Ugaritic, they do not necessarily tell us anything about Proto-Northwest-Semitic stress, or, by extension, Proto-Canaanite or Hebrew.

Regardless of the situation in other languages, there are two conceivable reasons to assume 'Classical Arabic' stress for an earlier stage of Hebrew: the stress-conditioned operation of the Canaanite Shift in forms like the participle (*qā́ṭilum > *qṓṭilum) and the stress-conditioned assimilation in the *piʿel* and *qaṭṭilum nominals proposed by Huehnergard (1992) (*qáṭṭilum > *qíṭṭilum, but not *qaṭṭíltum > **qiṭṭíltum). In chapter 3, however, it was argued that the Canaanite Shift need not have been stress-conditioned, and in chapter 7 (section 7.2.7), the phonetic plausibility of Huehnergard's proposed assimilation rule will be questioned and an alternative will be put forward. Thus, there is no evidence for 'Classical Arabic' stress at any point in the prehistory of Hebrew.

4.2.3 Penultimate stress

The idea that Biblical Hebrew stress originated in a system where the accent was regularly fixed on the penultimate syllable of each word was pioneered by Lambert (1890), but it did not receive widespread attention and acceptance until its renewed proposal by Cantineau (1931). Cantineau's argumentation is based on the following observations:

1. Pausal forms in Biblical Hebrew and their cognates in Biblical Aramaic are nearly always stressed on the same syllable, as in the perfect third person plural, Hebrew *qåṭā́lu*, Aramaic *qṭálu*.

2. The stressed syllables in these cases is the penultimate in words terminating in a (historically long) vowel, but the ultimate in words that have lost a historically short vowel; thus, Hebrew *qåṭā́lu* and Aramaic *qṭálu* < *qaṭálū, but the singular (pausal) Hebrew *qåṭā́l* and Aramaic *qṭál* < *qaṭála.

From this, he concludes that both (pausal) Hebrew and Aramaic are stressed on the syllable that was the penultimate before the loss of final short vowels. Unlike the stress systems mentioned above, this reconstruction is clearly based on attested

facts, and it is this stress system that provides the conditioning for the lengthening phenomena that will be discussed below.[2]

Biblical Hebrew has frequently changed the position of the stress, especially in context, as in the context form of the perfect third person plural, *qåṭlú*. Cantineau sees these forms as the result of analogical changes in the position of the stress, but for the most part, they are the result of regular, phonetically conditioned stress shifts. Blau (1993: 30–40) gives a clear overview, which we may summarize as follows:

1. Blau assumes 'Classical Arabic' stress as the first reconstructable stage. As was argued above, this is unnecessary.

2. Later, stress shifted to the penultimate syllable. This was the system before the loss of word-final short vowels.

3. In Blau's view, stress became phonemic when word-final short vowels were dropped, resulting in contrasts like imperfect *yaqṭúl < *yaqṭúlu vs. jussive *yáqṭul. In fact, we may postulate that stress became phonemic at an earlier stage, when triphthongs were contracted, resulting in stressed ultimate syllables as in *banáˊ < *banáya 'he built'. Besides the fact that the position of the stress was no longer predictable, the phonemic status of stress after this contraction may be illustrated by near-minimal pairs like *banúˊ 'they built' vs. *dáʿū 'know (m.pl.)'. The contraction of triphthongs must have occurred before the loss of word-final short vowels, but after the Canaanite Shift (see chapters 5 and 3).

4. After tonic, pretonic, and pausal lengthening, stress shifted from a short, open syllable to a following vowel. The now unstressed short vowel was later

[2]Strictly speaking, the stress system attested in the various vocalized forms of Aramaic does not reflect penultimate stress but follows the rules described by Birkeland (1940: 1–4): the stress was on the penultimate if the ultimate was open (e.g. *qaṭála > *qṭál*) or the open penultimate contained a long vowel (e.g. *qā́mat > *qā́maṯ* 'she stood'), but on the ultimate if it was closed and the penultimate had a short vowel (e.g. *qaṭalát > *qiṭláṯ*) or if both the ultimate and the penultimate were closed (e.g. the D-stem imperative *qaṭṭél > *qaṭṭél*). Nevertheless, it seems most likely that this system developed from one with regular penultimate stress, the cases of ultimate stress resulting from stress shifts to that syllable like those found in Hebrew. For one thing, Birkeland's rules presuppose the loss of mimation, which is most easily understood if the mimated case endings were unstressed (e.g. *málkum 'king' and not *malkúm). Secondly, the feminine *-t-suffix was regularly lost in postvocalic position in nouns and adjectives in Aramaic, e.g. *ḥadat- > Biblical Aramaic *ḥăḏā́* 'one (f.)', *malakūt- > BA *malḵū́* 'kingdom', but preserved in the perfect ending, *qaṭalat > BA *qiṭláṯ*. This may be understood as the elision of word-final *-t after stressed vowels only, if the stress was regularly on the original penultimate at this time.

reduced to *šwå* or a *ḥăṭepē* vowel, as in *qāṭálū > *qāṭalú́ > *qåṭlú, *›ánī > *›anǽ > ›ănǽ 'I', etc. Long vowels stayed stressed, e.g. *qā́mū 'they stood up' > *qǻmu*, as did vowels in closed syllables, e.g. *qāṭáltī > *qåṭálti*. This shift did not take place in pausal forms, as the stressed vowel was always lengthened there, resulting in pausal forms like *qåṭǻlu* and *›ǻni*. Another sound change that must have preceded this stress shift is the change of word-final *-Cy# to *-Ci#, although *w in the same position appears to have been maintained until after the stress shift: thus, *ṣ́aby 'gazelle' > *ṣ́abi (before the stress shift) > *ṣabí > *ṣ̲bí*, but *tóhw 'waste' > *tóhu (only after the stress shift) > *tóhu*; *wayyɛ́hy 'and it happened' > *wayyɛ́hi > *wayyɛhí > *wayhí*, but *wayyištáḥw 'and he prostrated himself' > *wayyištáḥu*.

Two important apparent exceptions to this stress shift are the forms of the perfect second and third person masculine with the first person singular suffix, *qṭaltáni* and *qṭåláni*, presumably from *qaṭaltánī and *qaṭalánī, respectively. These forms are practically the only cases of *a in an originally open syllable reflected by *pa̱ṭaḥ*.[3] The only convincing explanation for these forms is given by Janssens (1982: 62), who believes them to be the result of analogy. Presumably, he means something like this: pausal *qāṭ́ál : contextual *qāṭál = pausal *qṭālá́nī : contextual *qṭālánī. That only the first person singular suffix was affected may be explained by the unique distinction between the accusative suffix (*-ni*) and the possessive suffix (*-í*), only made in this person. Of the other personal suffixes, the second person masculine singular forms show an alternation between contextual and pausal forms on both verbs and nouns: *qṭålk̲ǻ / qṭålɛ́k̲å* and *db̲årk̲ǻ / db̲årɛ́k̲å* 'your word'. The remaining suffixes do not distinguish between contextual and pausal forms, whether they are attached to a verb or a noun; cf. the third person masculine singular, *qṭåló* and *db̲åró*, or the first person plural, *qṭålǻnu* and *db̲årénu*. In all persons but the first person singular, then, the personal suffixes on verbs and nouns behave similarly as far as context and pause are concerned. Only the first person singular would have reflected a split between the verb and the noun, with an alternation between contextual

[3] Forms with *he locale* like *mid̲bårå* 'to (the) wilderness (construct state)' and *gáṭ̲å* 'to Gath' are clearly secondary analogical formations, as is shown by the lack of gemination in the second form (based on *ga̱ṭ̲* < *gatt): *hammid̲bår* 'the wilderness' : *hammid̲bårå* 'to the wilderness' = *mid̲bar* 'wilderness (construct state)' : *mid̲bárå* 'to (the) wilderness (construct state)' = *ga̱ṭ̲* 'Gath' : *gáṭ̲å* 'to Gath'.

****qṭålní** (the regular expected outcome of *qaṭalánī) / pausal *qṭåĺ̊ani* versus non-alternating *dḇårí* in context and pause. The paradigmatically isolated context form, ****qṭålní**, would thus be an attractive target for analogical replacement.

5. Finally, in a change known as *segolization*, remaining words ending in two consonants inserted an epenthetic vowel, resulting in segolates with penultimate stress like *kɛ́lɛḇ* 'dog' < *kálb. These words were not affected by any further stress shifts.

4.2.4 Challenges to the penultimate hypothesis

Although it is most likely that an ancestral stage of Hebrew regularly stressed the penultimate syllable, alternatives have been put forward. Two important suggestions are based on the forms of the consecutive imperfect and the jussive.

In a return to phonemic stress, Hetzron (1969) reconstructs a difference in accentuation between the jussive *yaqṭúl and the preterite ("prefix-perfect" in his terminology) *yáqṭul, based on the attested difference between jussives like *yåśém* 'let him put' and consecutive imperfects like *wayyǻśɛm* 'and he put'. Penultimate stress in the consecutive imperfect was only preserved in open syllables preceding closed ultimates (hence *wayyǻśɛm*), but shifted to the ultimate in other cases, as in *wayyáqṭul > *wayyiqṭól*, *wayyā́ḇō > *wayyåḇó*.

Hetzron's account, which is also based on Akkadian, Gəʿəz, and Arabic, fails to explain all the Hebrew data. Specifically, there is the question why those verbs that have separate forms for the normal imperfect and the consecutive imperfect usually use the former in the first person singular, as in *wå›åqúm* 'and I stood up' instead of ****wå›ǻqɔm**, like *wayyǻqɔm*. If we assume that the jussive and the preterite were originally formally identical, this is explained by the supposed rarity of the first person singular jussive: rather than using a jussive, which expresses a wish that someone else do something, speakers would have chosen a volitive (›ɛqṭlǻ) or a long imperfect, creating an asymmetry in the jussive paradigm (cf. table 4.2). If the consecutive imperfect was simply formed by adding *wa- (possibly with gemination) to the jussive form, that would explain the origin of these strange first person consecutive imperfects. This explanation only works if the jussive and the preterite shared the same form. Indeed, Hetzron explains the introduction of first person singular consecutive imperfect forms of the strong

Table 4.2: Jussive/volitive and consecutive imperfect of *qwm* (not all attested from this root)

person	jussive/volitive	consecutive imperfect
3m.sg.	*yåqóm*	*wayyǻqɔm*
3f.sg.	*tåqóm*	*wattǻqɔm*
2m.sg.	*tåqóm*	*wattǻqɔm*
2f.sg.	*tåqúmi*	*wattåqúmi*
1c.sg.	*ʾåqúm*, ʾåqúmå**	*wåʾåqúm, wåʾåqúmå*

*For expected **ʾåqóm.

verb like *wåʾɛqṭlå* in this way, as an analogical extension after the merger of the preterite and the jussive in the strong verb due to a conditioned stress shift of *yáqṭul > *yaqṭúl (pp. 16–17). But how would forms like *wåʾåqúm* and *wåʾåqúmå* then have spread to those verbs which maintained a distinction between the preterite and the jussive? After the shift of the strong preterite *yáqṭul > *yaqṭúl, the weak preterites like *yáqum would have been completely isolated, no longer similar to their strong counterparts, nor identical to their associated jussives like *yaqúm. In this situation, there would be no reason to create the precursors of *wåʾåqúm* and *wåʾåqúmå* but preserve *wayyǻqɔm*. Hetzron's suggestion is therefore inferior to the penultimate hypothesis.

Revell (1984) offers another proposal, working with a slightly different version of bound stress. In his view, the stress fell on the vowel preceding the last consonant of the word, i.e. "at the stage prior to the loss of final short vowels, words ending in a vowel had penultimate stress, words ending in a consonant had final stress" (p. 442). Thus, both jussive and preterite would have been accented as *yaqṭúl, and the imperfect as *yaqṭúlu. The penultimate stress in some consecutive imperfect forms is then the result of retraction: *wayyāśém > *wayyā́śem > *wayyǻśɛm*.

On p. 442, Revell states that "[t]here is no evidence that final stress in those *waw* consecutive forms which show it did result from a forward shift in stress position". Contrarily, as is discussed in chapter 6, a relatively late stress shift is the best explanation for the appearance of *a* < *i in both pausal consecutive imperfects like *wayyiggåmál* 'and he was weaned (pause)' < *wayyiggāmél < *wayyiggā́mɛl and jussives like (ʾal-)*tålán* '(do not) stay the night (pause)' < *tālén < *tā́lɛn

(Blau 1981). Had these forms always been stressed on their ultimate syllable, as Revell proposes, they should regularly have developed to ***wayyiggåmél* and ***tålén*. Again, the penultimate hypothesis is superior.

4.2.5 Remaining issues

Even when following the penultimate account, though, a few morphological categories are still stressed on an unexpected syllable. First of all, the jussive of strong verbs, which should be reconstructed as *yáqṭul, is attested in Biblical Hebrew as *yiqṭól*; the same goes for I-n verbs, like *yántin > *yittén* 'he will give'. Unlike in some categories of weak verbs, the same syllable is stressed in the consecutive imperfect *wayyiqṭól*. Consequently, we may posit a regular stress shift of *ÝCCVC > *VCCÝC, thus *yáqṭol[4] > *yaqṭól. The contrast between many forms of the jussive and the imperfect was neutralized by this shift, enabling the originally jussive plural forms like *yaqṭólū and second person feminine *taqṭólī to spread into the imperfect, largely replacing the original imperfect forms like *yaqṭolűna and *taqṭolĺína. These imperfect forms without *nun* are widely attested in the consonantal text of the Hebrew Bible, including the oldest layers of the Biblical text, cf. *yimṣ꞉ú* 'they are finding', *yḥallqú* 'they are dividing', both in Judg 5:30.[5] Accordingly, this replacement, and therefore the stress shift that enabled it, were probably relatively early developments.

The stress also shifted to the ultimate in both the jussive and the consecutive imperfect of verbs with an open ultimate and penultimate syllable, like *wayyåḇ́ó* 'and he came' < *wayyábō, and in I-y verbs with *a* in the ultimate, like *wayyiqáṣ*

[4]This stress shift must postdate the change of *i and *u to *e and *o. This change had already taken place by the time that tonic lengthening was operative; the locative ending was still *-ah when tonic lengthening took place, as it conditions tonic lengthening, like a closed syllable containing a short vowel, not like a word-final long vowel *-ā; as the stress shift did not take place in forms with *he locale* – *꞉árṣā 'to the ground' remaining as it was, instead of *꞉árṣah shifting to *꞉arṣáh – tonic lengthening and the shift of *i, *u > *e, *o must thus precede the stress shift. The behaviour of locative forms may be contrasted with that of *yéqra꞉ > *yeqrá꞉ > *yiqrǻ*, which indicates that analogically restored word-final *꞉ had not yet been lost when this stress shift took place.

[5]These forms do not carry any weight if Kaufman (1995) is right about the history of the verbal endings with *nun* in Hebrew. Based on hypercorrect perfect forms with these endings like *yåḏ꞉ún* 'they knew' (Deut 8:16), he argues that the word-final *-n assimilated to the initial consonant of the following word and was therefore not expressed in the consonantal spelling, except *in pausa* and before *꞉, which did not trigger assimilation. A spelling like <yḥlqw šll> 'they are dividing spoil' (Judg 5:30), then, originally reflected a pronunciation like *yaḥalleqűš šālál. Appealing as this explanation is, it fails to account for the many forms with orthographically present <n> before other consonants than <꞉>.

'and he awoke' < *wayyī́qaṣ. Thus, penultimate stress was only preserved if the penultimate syllable was open and the ultimate was closed, *unless* the ultimate contained an a-vowel (and the penultimate did not); penultimate stress was retained in forms which have a-vowels in both syllables in Biblical Hebrew, like *wayyǻnaḥ* 'and he rested', but this is due to the origin of the *páṯaḥ* of these forms in a different vowel than *a, *u in this case (*wayyǻnaḥ* < *wayyánoḥ < *wayyánuḥ). The attraction of the stress by a-vowels can be explained by the crosslinguistic association between low vowels like [a] and vowel length (Lehiste 1970: 18–19), also exemplified by the more frequent pretonic lengthening of *a than that of *i or *u (see section 4.4 below). The greater inherent length of *a may account for it behaving similarly to a long non-a vowel in this case. Considering the words with an open ultimate syllable, we must note that the shift did not affect historically long vowels, as in *yābṓ›ū 'they will come' > *yåḇó›u*. Thus, the shift of *wayyábō > *wayyåḇó* can be seen as a part of the general stress shift from a short vowel in an open syllable to a following vowel in an open syllable. The *å* in the prefix is then the result of analogical restoration, based on the imperfect.[6]

As was already mentioned in the discussion of Hetzron (1969) and Revell (1984) above, even in verbs where the consecutive imperfect maintained penultimate stress, the jussive did not, as is evidenced by doublets like *wayyǻqɔm* 'and he stood up' vs. *yåqóm* 'let him stand up', *wayyǻśɛm* 'and he put' vs. *yåśém* 'let him put'. As the only formal difference between these forms before the stress shift was the presence of *wa- before the consecutive imperfects, this could be the result of a regular development, *#CV́CV > *#CVCV́, thus *yā́qom, *yā́śem > *yāqóm, *yāśém, while *wayyā́qom and *wayyā́śem remained unaffected. Confirmation for word-initial position being the conditioning factor comes from a group of irregularly formed jussives, all preceded by the negator *›al-*: in context, we find *›al-tǻlɛn* 'do not stay the night', *›al-tósɛp̄* 'do not continue', *›al-tǻṣar* 'do not distress', *›al-tǻśɛm* 'do not put', and *›al-tǻšɛḇ* 'do not turn away', and *in pausa*, *›al-tålán* 'do not stay the night' and *›al-tosáp̄* 'do not continue', with a development of *i > *a that is seen to be the result of original penultimate stress in chapter 6. These forms may have preserved their penultimate stress because the stressed syllable was not word-initial, just like in the consecutive imperfect, as *›al-* forms a prosodic unit with the following word. The more common construction with the 'normal' form

[6]It cannot be the result of pretonic lengthening. The stress shift postdated pretonic lengthening, as can be seen from the development of *qaṭálū > *qāṭálū > *qāṭalṹ > *qåṭlú*, not *qaṭálū > **qaṭalṹ > **qaṭālṹ > ***qṭålú*.

of the jussive following *ʾal-*, as in *ʾal-yåśém* ‘may he not put’, may be analogical, after the model of verbs that also shifted the stress to the ultimate syllable from a non-initial position: *yiqṭól* ‘let him kill’ : *ʾal-yiqṭól* ‘may he not kill = *yåśém* ‘let him put’ : *ʾal-yåśém* ‘may he not put’.

To finish off the topic of jussives and consecutive imperfects, we must note that *in pausa*, the stress shifted forward to the vowel preceding the word’s last consonant (Blau 1981). Thus, *in pausa*, *wayyā́qɔm > *wayyāqɔ́m > *wayyåqóm*, and *ʾal-tā́lɛn > *ʾal-tālɛ́n > *ʾal-tålán*. As Blau shows, this must have happened after the shift of unstressed *e > *ɛ; if we assume the parallel shift of unstressed *o > *ɔ was simultaneous, this requires an additional sound law changing stressed *ɔ́ > *ó, which is unproblematic. Additionally, this pausal stress shift must have taken place before segolisation, as segolates maintain their penultimate stress even *in pausa*.

Another well-known stress shift is mentioned by Blau (1993) on page 33, where he notes the ultimate stress in *ʾattǻ* ‘you (m.sg.)’ and *ʿattǻ* ‘now’. These forms only occur in context; in minor pause – the end of a phrase, but not the end of a whole sentence – we find *ʾáttå* and *ʿáttå*, respectively, and in major pause – sentence-final position – *ʾǻttå* and *ʿǻttå* with pausal lengthening. The phonetic similarity between these two words is striking, and in fact, this stress shift also occurs in two other non-pausal forms of a similar shape: *gittǻ* (*ḥépɛr*) ‘to Gath(-Hepher)’ and *ʿittǻ* (*qåṣín*) ‘to Eth(-Kazin)’, both in Josh 19:13. These additional two examples also contain a geminate *tt*, but the shift is not limited to that consonant: context forms of verbs from geminate roots that are normally stressed on the penultimate syllable sometimes shift the stress to the ultimate in context, like *zakkú* ‘they were pure’ < *zákkū (Bauer & Leander 1922: 429). Unless this is an analogical change, based on the fact that these verbal endings are usually stressed, we may posit another rule, that *V́C$_1$C$_1$V > *VC$_1$C$_1$V́ in non-pausal environments. Verbal forms from geminate roots where this change did not take place in context can then be interpreted as analogical extensions of the minor pausal form, based on the majority of verbs that did not distinguish between contextual and minor pausal forms.

Moving from *ʾattǻ* to the other personal pronouns, we find an alternation between contextual *ʾånoḵí* ‘I’ and pausal *ʾånóḵi*. This is one of the few cases where the stress shifts away from a historically long (i.e. not lengthened) vowel. The comparison with formally very similar contextual (*ʾal-*)*tåḇóʾi* ‘(do not) come (f.sg.)’ in Ru 3:17 and related forms makes it unlikely that this is the result of a regular

shift of *ʾānṓkī> *ʾånoḵí*. Rather, this form is probably the result of contamination with its synonym *ʾănî* 'I (context)', *ʾǻni in pausa*. Both of the latter forms are the regular outcome of *ʾánī.

Finally, there are three irregular processes which affect the position of the accent: the accent retraction known as *nsiḡå*, the shift towards ultimate accentuation in the consecutive perfect, and a shift towards ultimate accentuation in some forms of the hollow verb. All of these developments are probably quite late, as they seem to be closely linked to the reading tradition of the Hebrew Bible, rather than to the rules of Hebrew as a spoken language.

nsiḡå or *nåsoḡ ʾåḥor* is the retraction of the accent from an ultimate syllable to the penultimate in certain cases where it would otherwise precede the accented first syllable of the following word, as in *qǻrå lǻylå* 'he called "night"' (Gen 1:5) < *qārā́ lā́ylā (Joüon & Muraoka 2009: 95). *nsiḡå* can occur if the affected word is closely joined to the following word (indicated by a conjunctive accent) and the syllable structure of the last two syllables is -CVCV#, as in the example given, or -CVCV̆C#, as in *tóḵal lɛ́ḥɛm* 'you (m.sg.) will eat bread' (Gen 3:19) < *tōḵál lɛ̄ḥɛm. If the ultimate syllable is preceded by a *šwå* which reflects an original short vowel, the accents may be retracted to the vowel preceding that *šwå*, e.g. *yórḏe ḇór* 'those who descend into the Pit' (Ps 28:1) < *yōr(ə)ḏé ḇór. Revell (1984: 439–440) infers from this that *nsiḡå* must have operated when unstressed short vowels in open syllables were already reduced to [ə], but not yet deleted; this probably postdated the beginning of the Common Era, since the reduction of unstressed short vowels to *ə must postdate the writing of the Dead Sea Scrolls, and their complete loss must predate the writing of the Hexapla. This dating may be too early, however. As noted by Bergsträsser (1918: 128–132), *nsiḡå* is essentially the same phenomenon as the placement of secondary stress on a proclitic word, connected to the following word by *maqqeṗ*. The secondary stress on the first syllable in *båtte-ḥómɛr* 'houses of clay' (Job 4:19) shows that the relevant factor is the phonemic length of the secondarily stressed vowel, not the presence of a reduced vowel. Accordingly, the operation of *nsiḡå* can be described in terms of the synchronic phonology of Tiberian Biblical Hebrew and need not have been operative before the loss of unstressed short vowels in open syllables.

While *nsiḡå* may apply in these conditions, it often does not. Bergsträsser (1918: 130) notes that "the number of cases in which *nsiḡå* does not operate, although it could have according to the rules given above, is extraordinarily great (around 3500); a linguistic explanation is even less possible since cases with

and without retraction are often nearly identical. One must therefore simply assume inconsistency."[7] Given the synchronic nature of *nsiḡå*, however, it seems likely that it was conditioned by prosodic factors that we cannot retreive from the written text; thus Revell (2016), who argues that *nsiḡå* only occurs at the end of an intonation phrase, but that these breaks do not always correspond to the intonation indicated by the cantillation signs.

The first person singular and second person masculine singular of the consecutive perfect of many verbs are distinguished from the regular perfect by a difference in accentuation: where the regular perfect has forms like *qåṭálti*, *qåṭáltå*, the consecutive perfect accents the ultimate in context, like *wqåṭaltí*, *wqåṭaltǻ*. This does not seem to be the result of a regular stress shift. One reason is that the first person plural, *wqåṭálnu*, maintains the original penultimate accentuation, although the syllable structure is identical to those forms that do accentuate the ultimate. Secondly, no conditioning presents itself that would affect *wəqāṭáltī > *wqåṭaltí* but not *qāṭáltī > *qåṭálti*; if the difference were that the consecutive perfect originally accented an odd syllable, while the regular perfect accentuates an even syllable, *hiṯpåʿel* forms like *hiṯqaṭṭálti* should also have been affected, shifting to ***hiṯqaṭṭaltí*. Additionally, the supposed shift does not occur in the *qal* of most III-wy and III-ʾ verbs, as in *wʿåśíṯi* 'and I will do', while it does occur in forms with a similar syllable structure like *wahăqimoṯí* 'and I will establish'. Together with the fact that the vocalization of these consecutive perfects is completely unaffected, these inconsistencies have generally been taken as indicative of the late and artificial nature of this distinction. Revell (1984: 440) deems it "highly probable that the possibility of final stress in these forms has been used to provide a means of marking a semantic category which was otherwise not distinguished" and dates the development to the same period as *nsiḡå*, as the consecutive perfect shift does not occur in contexts where that retraction could operate.

The last category we will examine is the irregular accentuation of final vowels in verbal forms from hollow roots, as in the two imperatives at the beginning of Judg 5:12: *ʿurí ʿurí dḇorǻ* 'awake, awake, Deborah', whereas the immediately following *ʿúri ʿúri dabbri-šír* 'awake, awake, utter a song' shows the expected accentuation

[7] *Die Zahl der Fälle, in denen die Nesiga nicht eintritt, obwohl sie nach den obigen Regeln möglich wäre, ist außerordentlich groß (etwa 3500); eine sprachliche Erklärung ist um so weniger möglich, als oft Stellen mit und ohne Zurückziehung fast identisch sind. Man hat also wohl einfache Inkonsequenz anzunehmen.*

of this form. Bergsträsser (1929: 145) lists four environments in which this type of accentuation is found:

1. Verse-initially;
2. hemistich-initially;
3. before a word with an initial laryngeal, especially if the affected word ends in *-å*;
4. with no clear conditioning factor.

Like the shift in the consecutive perfect, this change in accentuation seems to be an artificial, late development and is accordingly not strictly phonetically conditioned.

4.2.6 Conclusion on stress

The position of the Hebrew stress, then, developed as follows:

1. Before the contraction of triphthongs, stress was fixed on the penultimate syllable of every stressed word. As some contracted triphthongs resulted in stressed ultimate syllables (e.g. *banáya 'he built' > *banā́), this bound stress became phonemic. In most words, the position of the stress then remained unchanged until after the operation of tonic lengthening, pretonic lengthening, and pausal lengthening.
2. *V́CCVC > *VCCV́C, resulting in the merger of the jussive with the imperfect in strong and I-n verbs once the imperfect singular and first person plural forms had lost their final short vowel (jussive *yáqṭul > *yaqṭól; imperfect *yaqṭúlu > *yaqṭól). III-ʾ verbs also participated in this shift (*yéqraʾ 'let him call' > *yeqráʾ), indicating their final *ʾ was still pronounced. This shift probably antedates the earliest attested stages of Hebrew, as the resulting use of imperfect plurals in *-ū is reflected throughout the history of the language.
3. *#CV́CVC > *#CVCV́C, affecting the jussive of I-ʾ, I-wy, II-wy, and geminate roots (e.g. *yáśem 'let him put' > *yaśém, or *yā́śem > *yāśém). This shift must antedate the change of unstressed *e, *o > *ɛ, *ɔ.

4. *V́CaC > *VCáC, affecting the consecutive imperfect of some I-wy roots (e.g. *wayyí̱qaṣ ‘and he awoke’ > *wayyīqáṣ). This shift must antedate pausal lengthening, as can be seen from pausal forms like *wayyišǻn* < *wayyīšán < *wayyí̱šan ‘and he fell asleep’.

5. After pretonic and pausal lengthening had occurred, *V̆́CV# > *V̆CV́# (e.g. *qāṭálū > *qāṭalú, *yeqṭólū > *yeqṭolú). This postdated the change of *-Cy# > *-Ci#, but antedated the change of *-Cw# > *-Cu#. At some point after this change, unstressed short vowels in open syllables were reduced to *ə and later lost altogether (except after gutturals). The frequent plene spelling of these vowels in some Dead Sea texts marks the date of their composition as a *terminus post quem* for this last development.

6. *V̆́C:V# > *V̆C:V́# in context (e.g. *ʾáttā ‘you (m.sg.)’ > *ʾattá).

7. The prefix vowels in forms like *wayyåḇó* ‘and he came’ were analogically restored, based on the imperfect. In context, *ʾånóḵi ‘I’ changed to ʾånoḵí due to contamination with ʾănî ‘I’.

8. In pause, stress regularly shifted forward to the vowel preceding the word’s last consonant (e.g. *wayyélɛk ‘and he went’ > *wayyēlék). This happened after the change of unstressed *e, *o > ɛ, *ɔ and preceded Blau’s Law (see chapter 6).

9. Segolisation created a large new group of words with penultimate stress.

4.3 Tonic lengthening

Tonic lengthening is the process whereby some historically short vowels were lengthened in stressed syllables. In Tiberian Hebrew, the result of this lengthening is most clearly reflected in the difference between non-lengthened *a > *a* (*páṯaḥ*) and long *ā > *å* (*qǻmɛṣ*), as in the example cited at the beginning of this chapter, *nišbár* ‘it was broken’ < *nišbár vs. *nišbǻr* ‘broken (m.sg.)’ < *nišbā́r. Long and short *ṣere* and *ḥólɛm* are not distinguished in the Tiberian vocalization, but besides their different behaviour in unstressed position discussed in chapter 2, the difference can be seen from the short vowels’ shift to *a* before word-final gutturals, while the long vowels are maintained with the insertion of a furtive *páṯaḥ*: *šåmáḥ* ‘he rejoiced’ < *śāméḥ vs. *śåméaḥ* ‘glad (m.sg.)’ < *śāmḗḥ; *gåḇáh*

'it was high' < *gāḇóh vs. *gåḇóăh* 'high (m.sg.)' < *gāḇṓh. The length of these vowels is confirmed by Greek transcriptions, e.g. the Septuagint's ιαχωβ 'Jacob' and ραχηλ 'Rachel', parallel to the lengthened vowel in Tiberian *yiṣḥǻq* 'Isaac'. Note that *i and *u are lengthened to *ē and *ō, respectively, not *ī and *ū. This points to an earlier phonetic change of *i > *e and *u > *o.

As these examples illustrate, tonic lengthening mainly operated in nominal forms, including proper nouns and participles, but not in finite verbs. We do not, therefore, seem to be dealing with a simple lengthening of every stressed short vowel. Let us examine various proposed explanations for this apparently morphological conditioning.

4.3.1 Extension of pausal forms

Brockelmann (1908: 106) does not see tonic lengthening as a separate sound change. Instead, it is the analogical extension of pausal forms; their lengthened vowel is thus the result of pausal lengthening. While both nouns (like *dåḇǻr* 'word') and verbs (like *qåṭǻl*) show a lengthened stressed syllable *in pausa*, this pausal form was only regularly extended into context in nominal forms, as these occurred *in pausa* more frequently than verbs. This explanation is accepted by Bauer & Leander (1922: 233), among others.

This account cannot explain why tonic lengthening practically never occurs in segolates (like *kέsεp̄* 'silver') and is rare in words ending in a historical geminate (like *báḏ* 'piece' < *bádd), while these words do undergo pausal lengthening (*kǻsεp̄*, *bǻḏ*), just like verbs. It makes more sense to see tonic lengthening and pausal lengthening as two separate processes.

4.3.2 Different accentuation

Bergsträsser (1918: 115ff) traces the difference in tonic lengthening back to a difference in accentuation: *dabáru > *dåḇǻr* 'word', but *qáṭala > *qåṭál*. As was discussed in section 4.2 on stress above, this reconstruction of a different stress pattern is to be rejected. Birkeland (1940: 19ff), on the other hand, accepts the penultimate hypothesis, which would have fixed the stress on the same syllable in both *dabáru and *qaṭála, but believes that the nature of the stress differed between nouns and verbs. Loosely, we may say that nouns were more heavily

Table 4.3: Loss of final vowels and mimation and tonic lengthening according to Sarauw (1939)

stage	'word (abs.)'	'word (cs.)'	'silver (abs.)'	3m.sg. pf.
proto-form	*dabárum	*dabaru	*káspum	*qaṭála
*CV# > *C#	*dabárum	*dabar	*káspum	*qaṭál
loss of mimation	*dabáru	*dabar	*káspu	*qaṭál
*VCV# > *V̄C#, *VCCV# > *VCC#	*dabā́r	*dabar	*kásp	qaṭál
attested form	*dåb̲ā́r*	*db̲ar*	*kɛ́sɛp̄*	*qå̱t̲ál*

stressed, resulting in tonic lengthening, which did not take place under the weaker stress borne by verbs. This explanation is ad hoc and therefore not very satisfactory.

4.3.3 Compensatory lengthening, lengthening in open syllables

The view that tonic lengthening was a form of compensatory lengthening was convincingly put forward by Chr. Sarauw (1939), and later reiterated by Blau (1983). Sarauw notes that tonic lengthening did not occur in synchronically open syllables, as in the suffixed *qṭåláni*[8], most of which have later lost their originally stressed vowel, like *qå̱tlú* < *qaṭálū (p. 67). As it does occur in historically open syllables that were later closed, as in *dabáru > *dåb̲ā́r*, the lengthening of the stressed vowel may be seen as compensating for the lost final vowel: "therefore the loss is simultaneous with the lengthening, both phenomena are two sides of the same thing"[9] (p. 68). This compensatory lengthening only occurred in open syllables, which explains why the segolates are excluded. So, too, are the construct states of nouns[10] and finite verbal forms, as these had already lost their final vowel at an earlier stage, without compensatory lengthening. The case vowel of absolute nominals was protected by mimation, which was later lost itself (see table 4.3).

[8] Not the best example, as this form is to be regarded as an analogical innovation (see section 4.2 above).

[9] *... so ist der Schwund mit der Dehnung gleichzeitig, beide Erscheinungen sind zwei Seiten derselben Sache.*

[10] Alternatively, the lack of tonic lengthening in construct states may also be due to their unstressed nature, which is also reflected in the non-operation of pretonic lengthening in these forms. The loss of case vowels in construct states could then also result from the later elision of unstressed short vowels in open syllables.

Sarauw's identification of mimation as the distinctive feature of absolute nominals is firmly grounded in data from other Semitic languages, and it does away with the apparent morphological conditioning of tonic lengthening. His explanation falls short, though, in cases of tonic lengthening where no vowel was lost, as the lengthening cannot then be said to be compensatory. Such non-compensatory lengthening can be found in (contextual) forms of both nouns and prepositions with a first person plural suffix, like *lǻnu* 'to us' < *lánū, in consecutive imperfect forms with penultimate stress like *wayyǻqɔm* 'and he stood up' < *wayyáqum, and in *he locale* forms like *ʿazzǻṯå* 'to Gaza' < *ġa^{d}z^{d}zátah. Additionally, we may adduce the third person feminine perfect forms with suffixes, such as *ʾăḵǻlǻṯam* 'she ate them (m.pl.)' < *ʾakalátam, an analogical formation based on the third person masculine after the loss of word-final short vowels: *ʾakál 'he ate' : *ʾakalám 'he ate them' (regularly from earlier *ʾakaláhimma) = *ʾakálat 'she ate' : *ʾakalátam 'she ate them'. These forms show that the loss of a following vowel was not necessary for tonic lengthening to occur. Rather, tonic lengthening was conditioned by syllable structure: only open syllables were affected. This view is also held by Janssens (1982), who seemingly independently suggests mimation as the factor that protected the case vowels of nouns in the absolute state, and Florentin (2015), who does not explain the longer retention of word-final vowels in absolute states of nouns. Besides syllable structure, the other conditioning factor seems to have been the quantity of the following vowel: tonic lengthening did not occur before long vowels, as in *qaṭálū > *qåṭlú*.[11] We may thus formalize this sound change as *V́CV̆ > *V̄CV̆, operating after the first loss of word-final short vowels, which occurred before the loss of mimation.

Evidence for the history of absolute case vowels

Formulating tonic lengthening as a general change of *V̆́CV̆ > *V̄́CV̆ presupposes that an earlier stage of Hebrew preserved case endings in the absolute state of nouns and adjectives while other word-final short vowels had already been lost. Is this state of affairs attested? Such evidence is hard to come by, as may be illustrated by a consideration of the situation in Ugaritic.

Ugaritic had already lost mimation, but preserved word-final short vowels in all types of words, both nominal (absolute and construct) and verbal. This is attested

[11] The first person plural personal suffix *-nu*, ostensibly < *-nū, thus behaves anomalously in this regard. See chapter 8 for a discussion of the etymology of this suffix.

in both alphabetic and syllabic spellings: alphabetically, we find forms like <rpu> /rāpiʾu/ 'shade (absolute)', <ksu> /kussiʾu/ 'throne (construct)', and <qra> /qaraʾa/ 'he called', while syllabic transcriptions provide such examples as *a-da-nu* /ʾadānu/ 'father (absolute)', *ḫa-at-ni* /ḫatni/ 'son-in-law (gen. construct)', *ṣa-ma-ta* /ṣamata/ 'it was transferred' (Huehnergard 1987). Does this not contradict the scenario whereby an ancestor of Hebrew only preserved word-final short vowels in the absolute state of nominals?

Making the question so explicit reveals the problem. The evidence from Ugaritic does not necessarily have any bearing on the history of Hebrew, as Hebrew does not descend from Ugaritic. Even two dialects of the same language could have participated in different sound changes, all the more so for two different languages. Unfortunately, we have no attestation of any direct ancestor of Biblical Hebrew, only of its close relatives, spoken at an earlier time. Bearing this in mind, we will examine the evidence from second-millennium BCE Canaanite, attested in Egyptian transcriptions and in the Amarna Letters, and from Phoenician.

The direct evidence from Egyptian transcriptions is limited, as it almost exclusively consists of nouns, both common and proper. Evidence on the preservation or loss of word-final short vowels in verbs is lacking. Based on the spelling of names like *bn-ʿnt*[12] ('Son of Anath'), with a form of <n> that indicates it is syllable-final, Burchardt (1910: 56) concludes that the construct state had lost its case vowel when these transcriptions were made, during the New Kingdom (from the sixteenth century BCE onwards). The case endings in the absolute state, on the other hand, are clearly attested up to the thirteenth century (Albright 1934: 19). Based on a different understanding of the Egyptian orthography, however, Hoch (1994: 456) has more recently rejected the idea that these transcriptions show an earlier loss of case vowels in the construct state.

Another indication could come from the loss of mimation. If Sarauw's explanation is correct, this must have postdated the Canaanite Shift: the loss of mimation must have postdated the first loss of word-final short vowels (as *qaṭala > *qaṭal was affected, but *dabarum was not), which must have postdated the contraction of word-final triphthongs (as *banaya > *banā, not **banay), which, in turn, must have postdated the Canaanite Shift (as *banā was not affected, indicating that the form was still *banaya during the Canaanite Shift's operation). Both the presence

[12]Transliterations of Egyptian have been taken over from the cited source without alteration. As Burchardt (1910) and Hoch (1994) use a different transliteration system, this has led to some inconsistencies which I am unqualified to resolve.

and absence of mimation are attested in Egyptian transcriptions, as well as the Canaanite Shift, which first appears in transcriptions from the fifteenth century BCE like *ṯu=pi₂=–r* /ᵗsōpirV/ 'scribe' (Hoch 1994: 423). The loss of mimation, however, is attested at a much earlier date, in execratory texts from the late Twelfth Dynasty (nineteenth century BCE). In these texts, we find place names with mimation, like *bḳʿtm* (Biblical Hebrew *biqʿå*) and *3wš3mm* (Jerusalem), but many place names, like *bwtšmšw* (Biblical Hebrew *beṯ-šɛ́mɛš*), lack mimation, as do all personal names (Posener 1940). This indicates that in the early second millennium BCE, mimation had already been lost in some dialects, at least. Unfortunately, we cannot simply apply that statement to the entire Northwest Semitic speech area, but we may say that the data from Egyptian transcriptions do not corroborate the idea that absolute case vowels were preserved longer due to the protective effect of mimation.

The same goes for the Canaanite linguistic material preserved in the Amarna Letters. A complicating factor is that the Akkadian of the period had exactly the state of affairs that Sarauw postulates for pre-Hebrew: word-final short vowels had only been preserved on nouns and adjectives in the absolute state. Thus, when we find vowelless forms like *zu-ru-uḫ* LUGAL-*ri* 'the king's arm' (EA 288:14, from Jerusalem), the spelling of the construct state without a case vowel could reflect an Akkadian convention. On the other hand, there are also attestations of West Semitic perfect forms like *ḫa-ba-ta* 'he has seized' (EA 113:14, from Byblos). Here, the final vowel cannot be due to Akkadian influence and almost certainly reflects the existence of a third person singular masculine perfect form *qaṭala, in the Byblian of the period at least. Similarly, Rainey (1975) makes a convincing case that Amarna Canaanite reflects a verbal system with three different moods of the prefix conjugation: an imperfect, marked by *-u, a jussive–preterite, marked by *-Ø, and a volitive, marked by *-a. These suffixes are often attached to Akkadian forms of the stem, resulting in forms like *ia-di-nu* 'he allows'[13] (EA 105:85), *yi-id-din* 'he gave' (EA 248:11), and *yu-da-na-ni* 'may it be given to me' (EA 79:33). As mimation has been completely lost in Amarna Canaanite, this seems hard to reconcile with the loss of word-final short vowels before the loss of mimation.

Let us finally turn to the evidence from Phoenician. Besides the Canaanite Shift, Phoenician also participated in a later, second shift of *ā > *ō, unlike Biblical Hebrew. This is reflected in forms like Punic (in Latin transcription) *chon*

[13]Occurring in a main clause, so this is not the Akkadian subjunctive marker /-u/.

'he was', *nasot* 'I carried', and *corathi* (probably corrupt for **carothi*) 'I called' (Friedrich & Röllig 1999: 43), all from *ā which was preserved in Hebrew **kån* (not attested in the *qal*, but cf. *qåm* 'he stood up' etc.), *nåśå̱ṯi*, and *qårå̱ṯi*. It has been claimed that historically short, stressed *a in an originally open syllable – the same environment where Biblical Hebrew shows tonic lengthening – also shifted to *o, e.g. Phoenician λαβον 'white' < *labán, cf. Biblical Hebrew *låḇå̱n*, or Punic *adom* 'man' < *ʾadám, cf. Biblical Hebrew *ʾåḏå̱m*. If we posit that Phoenician also underwent tonic lengthening in the same cases where Biblical Hebrew did, this could simply be seen as the same shift of secondary *ā > *ō.

Again, though, things are not so simple. As Dotan (1976) points out, these are problematic examples. λαβον could be a *qaṭulum adjective, instead of *qaṭalum. Either way, the short ο is not what we would expect from a development of *labán(u) > *labā́n > *labṓn, or *labún(u) > *labṓn (with tonic lengthening of *ú > *ṓ): in both cases, /labṓn/ should probably be spelled with an omega, **λαβων. *adom* is a questionable example, as it is from Late Punic; perhaps we are dealing with a qualitative assimilation of *am > *om. In this way, Dotan problematizes all evidence for a Phoenician Shift of short *á > *ó or *ṓ, sometimes, perhaps, unfairly. The strongest indication that *á > *ṓ in Phoenician remains the vocalization of the Phoenician parallels to Hebrew names like *yhonå̱ṯǻn*, consisting of a theophoric element and a perfect form: these are well-attested, e.g. [Id]EN-*ia-a-tu-nu*, Βαλιτων, *Baliaton* /baʿlyatōn/ 'Baʿl has given', [I]*ba-ʾa-al-ia-*(*a-*)*šu-pu* /baʿlyasōp/ 'Baʿl has increased' (Friedrich & Röllig 1999: 41). Dotan (pp. 87–89) explains the second part of these names as *qaṭōl agent nouns, noting the existence of such Hebrew names as *ṣå̱ḏóq*, *ʿåmós*, and *ʾåmóṣ*; the meaning would then be 'Baʿl is giver' and 'Baʿl is increaser'. No such Hebrew names occur, however, with a preceding theophoric element: we find *yhonå̱ṯǻn* and *ʾεlyåsǻp̄*, but not ***yhonå̱ṯón* or ***ʾεlyåsóp̄*. A stronger counterargument is furnished by evidently similar Phoenician names in transcription listed by Friedrich & Röllig (1999: 41), [I]*èl-iá-ta-a-nu* /ʾilyată̆n/ 'El has given' and [I]*mil-ki-a-šá-pa* /milkyasă̆p/ 'Milk has increased'. Here, then, we see the non-occurrence of the supposed Phoenician Shift. Friedrich & Röllig attribute this to dialectal variation, but if even the strongest examples of the shift of *á > *ṓ are problematic, we cannot be sure it really took place, and Phoenician cannot be said with certainty to have undergone tonic lengthening.

Additionally, there is the evidence from Old Byblian (probably to be dated to the early first millennium BCE) that word-final short vowels were still preserved

on verbs, at least: the spellings <bny> 'he built' and <ʿly> 'he went up' probably reflect *banaya and *ʿalaya. As Phoenician shows no trace of mimation, this is another lack of corroboration for Sarauw's account, where the first loss of short vowels preceded the loss of mimation. There are also indications that word-final vowels were lost, however, and some alternative interpretations of the verbal forms in -<y> are given in Gzella (2013b).

Neither Ugaritic, nor second-millennium Canaanite, nor Phoenician, then, testifies to an earlier loss of word-final short vowels in words that did not undergo tonic lengthening in Hebrew. As was already noted, this is not damning evidence, and Sarauw's explanation for the distribution of tonic lengthening is still the only one that matches the data and is linguistically plausible. Bearing the lack of confirmation from the attested data in mind, then, we may tentatively maintain it.

4.3.4 Remaining issues

Occasionally, we find *å* where the rules given above would predict *a*, and vice versa. With *å* < *a in syllables that should not have undergone tonic lengthening, the examples are *yå̊m* 'sea (abs. and cs.)' < *yámmum, cf. the plural *yammím* < *yammī́ma; *tå̊m* 'unblemished' < *támmum, cf. the plural *tammím* < *tammī́ma; the adverb *šå̊m* 'there' < *t̲ámma, cf. the locative *šå̊mmå* < *t̲ámmah and Classical Arabic *t̲amma*; and the third person masculine plural suffix *-å̊m* < *-ám < *-ahímma, as in *db̲årå̊m* 'their word' and *qṭålå̊m*. With *a* for expected **å, there are cases like *ʾarbáʿ* 'four (f.)' < *ʾarbáʿum, cf. the masculine construct state *ʾarbáʿat̲* < *ʾarbáʿtum and Classical Arabic *ʾarbaʿun*. Blau (1983: 28–29) sees these forms, listed in table 4.4, as resulting from qualitative assimilation, which took place after *ā shifted to *å̄ in Tiberian Hebrew. In these words, then, *a was rounded to *å* before the bilabial *m*, while *å was unrounded to *a* before the pharyngeal ʿ. Especially this latter change was only maintained in uncommon noun patterns, as *å* was analogically restored in words from more frequent patterns, like *råšå̊ʿ* 'evil (m.sg.)'. Additionally, we may note that the change of *a > *å* only occurred in accented syllables, whereas *a was retained as *a* in unaccented syllables, as in *yam-súp̄* 'Sea of Reeds', *ʾăk̲ålå̊t̲am* 'she ate them'.

A problematic alternation between *pát̲aḥ* and *qå̊mɛṣ* in context is found in a number of nouns and adjectives of the *qallum pattern, e.g. *ʿám / ʿå̊m* 'people' < *ʿammum, *rá*b̲* / *rå̊b̲* 'much' < *rabbum. A small number of these words, listed in table 4.5, has the added peculiarity of always displaying the form with *å* when

Table 4.4: Assimilation of *a and *å

attested form	expected form	meaning
*a > *å*		
yǻm	***yám*	‘sea’
šǻm	***šám*	‘there’
tǻm	***tám*	‘unblemished’
-ǻm	***-ám*	3m.pl. suffix
*å > *a*		
ʾɛṣbá ʿ	***ʾɛṣbå ʿ*	‘finger’
ʾarbá ʿ	***ʾarbǻ ʿ*	‘four (f.)’
koḇá ʿ	***koḇǻ ʿ*	‘helmet’
qoḇá ʿ	***qoḇǻ ʿ*	‘helmet’
moḏá ʿ	***moḏǻ ʿ*	‘kinsman’
qaʿqá ʿ	***qaʿqǻ ʿ*	‘tattoo’
qarqá ʿ	***qarqǻ ʿ*	‘floor’

combined with the definite article, no matter the context, as in *håʿǻm håråḇ hazzɛ́* ‘this great people’.[14]

Ernest Revell (1981) investigates this issue and concludes that the choice of *a* or *å* was influenced both by the surrounding consonants and by the word’s position in the sentence, or more specifically by prosodic factors. Unlike most nominal forms, these words tend to have a special form in minor pause, where they appear with *å*. Some of these cases of minor pause can be independently identified by the occurrence of a form of the conjunction *w-* that is restricted to this prosodic environment, *wå-*. Thus, in cases like *wʿám wåʿǻm kilšonó* ‘and every people according to its language’ (Est 3:12), the second instance of *ʿam / ʿåm* has *qǻmɛṣ* because it is a minor pausal form. Most *qallum words that ostensibly occur in minor pause have *å* like this, the exception being the somewhat frequent form *wåḥáy* ‘and he will live’.

Besides these clear cases of minor pause, there are other examples of words with *å*. Unfortunately, their distribution cannot be adequately described, as it was probably greatly influenced by prosodic factors. We lack detailed information

[14] *habbǻḏ* ’the linen’, *haggǻḡ* ’the roof’, and *haggǻn* ‘the garden’ are also only attested with *å*, but this may be due to the prosodic context of the attested forms.

Table 4.5: *qallum words with *å* with the article in all positions

BH	meaning
håhǻr	'the mountain'
hɛḥǻg̅	'the festival'
hå‘ǻm	'the people'
happǻr	'the bull'
*hårǻḇ**	'the numerous, much'

*There is one attestation of *hårá́ḇ*, in Num 35:8.

on the prosody of the Hebrew Bible text at the time the vowels were fixed; as Revell has repeatedly argued (1980; 1981; 2012; 2016), it differed from that indicated by the cantillation signs. We cannot, then, explain why we find *zέra‘ ráḇ toṣí haśśåḏέ* 'the field will bring forth much seed' in Deut 28:38 but *wg̅am-šålǻl rǻḇ bǻzzu mehέm* 'and they took much spoil from them' in 2Ch 28:8 without resorting to circular reasoning: there is a difference in the vocalization of *ráḇ / rǻḇ* because there was a difference in prosody, which can be seen from the difference in vocalization.[15] Additionally, different words exhibit the *å* reflex in different contexts, which is probably due to the effect of the consonants preceding and following the vowel. Revell (1981: 85) notes that non-alveolar voiced consonants following the vowel "had a tendency to induce the 'long' reflex of original short *a*". More precisely, only words ending in such a consonant occur with *å* outside of minor (and major) pausal position: besides those listed in table 4.5, these include *bǻr* 'grain', *ṣǻr* 'dire straits', 'enemy', *qǻw* 'measuring line', and *rǻ‘* 'evil'; it is unclear whether *ḥǻm* 'warm (m.sg.)' belongs to this group, or to the cases of *-ám > -*ǻm* listed in table 4.4. *már* 'bitter(ness)' unexpectedly maintains *a* in all positions. The further conditioning of the different reflexes of *a may be linked to the initial consonant. *bǻr* 'grain' and *pǻr* 'bull', which both start with a bilabial plosive, are the only words to occur with *qǻmɛṣ* as the first half of a word pair, as in *bǻr wålέḥɛm* 'grain and bread' (Gen 45:23). Like most of the other words, which have *páṯaḥ* here, they also have *a* before adjectives and restrictive relative clauses, as in *pár ’ɛḥǻḏ* 'one bull' (Num 29:36 et passim), *‘ám lo yåḏá‘ti* 'a people (which) I did not know' (Ps 18:44); *rǻḇ* 'much' and *rǻ‘* 'evil', however, both starting

[15] Incidentally, *ráḇ* and *rǻḇ* bear the exact same accent in these verses.

with *r*, also occur with *qǻmɛṣ* in these positions. Finally, only those words with a non-alveolar initial consonant, listed in table 4.5, occur with *å* in all contexts when the article is added. As *qǻmɛṣ* was a back rounded vowel in the Tiberian pronunciation, it seems plausible that bilabial, velar and pharyngeal consonants are all associated with its occurrence in these words. Due to the small number of affected forms, however, the apparent correlation between the vowel quality and the initial consonant could also simply be coincidental.

To conclude the discussion of tonic lengthening, let us consider a word that is frequently grouped with the *qallum nominals listed in table 4.5, *ʾérɛṣ* 'land'. Like the former, *ʾérɛṣ* seems to take a pausal form when the article is added, yielding *håʾǻrɛṣ* 'the land'. This is the only case of the article triggering 'pausal' vocalization in a *qaṭlum noun. A similar case, however, is found in the alternation between *ʾărón* 'ark' and *håʾårón* 'the ark', hardly a pausal form. Both of these words start with ʾ, a sound which is known to have been lost and secondarily reintroduced in other cases (Bauer & Leander 1922: 223); for the loss in a similar environment to that of *ʾăron*, cf. *leʾelōhī́m > *lelohím* 'to God', for its secondary reintroduction, cf. *tōk̲lé̱hu > *tʾɔk̲lé̱hu* 'it will consume him' (Job 20:26). It seems quite possible that regular *hāʾárṣ and *hāʾarṓn changed to *hā́rṣ and *hārṓn. The *ā was then reinterpreted as belonging to the noun, not the article, and when the *ʾ was restored based on its presence in the spelling and the form of the words without the article, this led to the secondary forms, *hāʾárṣ > *håʾǻrɛṣ* and *hāʾārṓn > *håʾårón*. These forms thus reflect a different process than the seemingly similar cases like *ʿám / håʿǻm*.

4.3.5 Conclusion on tonic lengthening

Although it is not supported by the epigraphic evidence, the most plausible explanation for the different treatment of stressed vowels in nominals and verbs, from a linguistic perspective, remains that of Sarauw (1939): the affected vowels in nouns and adjectives were in an open syllable when tonic lengthening took place, as the following case vowel had been preserved due to mimation, while the word-final vowels in verbs had already been lost, closing the syllable. Tonic lengthening can then be formulated as a change of *V́CV̆ > *V́CV̆. Later, nominals that originated in the *qallum pattern and ended in voiced, non-alveolar consonants introduced *qǻmɛṣ* in some contexts, which cannot be identified with complete accuracy. The presence of *qǻmɛṣ* in *håʾǻrɛṣ* 'the land' and *håʾårón* 'the ark' is probably due to

secondary reintroduction of *ʾ, which had been lost. Finally, at some point after the Tiberian shift of *ā > *å*, assimilation took place in some words, changing *a to *å* before *m* in accented syllables and *å to *a* before ʿ.

4.4 Pretonic lengthening

Pretonic lengthening is the lengthening of *a > *ā, (*i >) *e > *ē, and a similar change affecting (*u >) *o, all in open syllables immediately preceding a word's stressed syllable. Many scholars have found the lengthening of an unstressed vowel directly before a stressed one hard to explain from a phonetic point of view, especially in cases where the stressed vowel remained short, as in *qaṭál > *qāṭál > *qåṭál*. Accordingly, much has been written about this "**riddle of pretonic lengthening**" (Blau 2010: 124, emphasis in original). As Malone (1990: 468) points out, though, the phenomenon is known from other languages, both within and outside Semitic. Indeed, the phonetic implausibility of the lengthening of pretonic vowels in open syllables may be questioned: the lengthening of vowels in open syllables is a common change, crosslinguistically, and it does not seem strange that syllables which are closer to the stress should be more prominent themselves.

We will follow the overview of the literature given by Blau (2010: 125–128). He distinguishes between two main trends of explanation: one which attributes (apparently) pretonic lengthening to the presence of stress, either primary or secondary, and one which sees it as the result of language contact.

4.4.1 'Pretonic' lengthening due to stress

Finding the lengthening of a stressed vowel easier to accept than that of a pretonic one, some scholars have hypothesised that the lengthened vowel bore either primary or secondary stress. Goetze (1939) rejects the penultimate stress hypothesis (see section 4.2 above) and holds that what is normally seen as the pretonic vowel was actually stressed: thus, for instance, the third person masculine singular perfect would have developed from *qáṭal > *qáṭal > *qāṭál > *qåṭál*. This reconstruction of the stress system is incompatible with the rest of the evidence, and Goetze's explanation must accordingly be dismissed.

Less problematically, Sarauw (1939) suggests that the pretonically lengthened vowel bore secondary stress. As is extensively detailed by Malone (1990), however, this reconstruction does not match the actual data on secondary stress preserved in Tiberian Hebrew and is only based on the secondary stress's supposed lengthening effect. Attributing pretonic lengthening to the workings of secondary stress leads to unnecessary complications and is circular.

4.4.2 Pretonic lengthening due to language contact

The second type of explanation for pretonic lengthening supposes contact between two language varieties, one which preserved unstressed short vowels in open syllables (referred to as P henceforth) and one which had reduced them (henceforth, R). Speakers of R no longer had short, unstressed vowels in open syllables in their language variety, only long ones, so if they tried to approximate a P form like /qaṭál/, they produced /qāṭál/. Different authors hold different opinions on which language varieties are to be identified as P and R, and when this contact-induced lengthening took place. Brockelmann (1908: 101) identifies P as the Hebrew reading tradition and R as the vernacular Aramaic in the post-biblical period. For Bauer & Leander (1922: 237), P is the indigenous Canaanite of the second millennium BCE, while R is the Aramaic-like language variety of the invading Israelites. Birkeland (1940: 8–14) also relates the process to the supposed conquest of Canaan by the Israelites, but in his opinion, it is Canaanite that had reduced its vowels and the language variety of the Israelites that preserved them. Blau (1978, 2010), finally, adopts Brockelmann's identification of P as Hebrew and R as Aramaic, but dates pretonic lengthening to the Second Temple period, believing that "when Aramaic syllable structure threatened to overcome Hebrew, speakers of Hebrew were anxious to preserve (originally short) vowels in open pretonic syllables and thus maintain **a contrast with Aramaic**" (2010:128, emphasis in original).

The proposals of Bauer & Leander and Birkeland are based on the highly questionable notion of Hebrew as a mixed language, which has generally been abandoned. Those of Brockelmann and Blau rely on the actually attested contact between what were undeniably two separate languages, Hebrew and Aramaic, but they run into chronological problems. As Blau (1978: 94) himself notes, the Hebrew underlying the Septuagint already reflects pretonic lengthening, as in ασηρωθ (BH *ḥăṣerót*) < *ḥaṣirā́tum. Any explanation of pretonic lengthening that

relies on contact with Aramaic, then, is contingent on Aramaic vowel reduction predating the translation of the Septuagint in the third century BCE. Beyer (1984: 128–136) states that Aramaic only reduced unstressed short vowels in open syllables in the third century CE, much later than required for this scenario, but as noted by Kaufman (1984), the evidence shows that the change was gradual: while the complete loss of unstressed short vowels in open syllables did not occur until the third century CE, they were qualitatively reduced, probably to [ə] or similar, from the Achaemenid period onwards. It is conceivable that pretonic lengthening took place to maintain the vowel quality of the Hebrew word in syllables where Aramaic no longer tolerated full vowels, although it is by no means obvious. Considering the clear phonetic conditioning of pretonic lengthening, however, an explanation from language contact is probably unnecessary.

4.4.3 The conditioning of pretonic lengthening

If we accept the possibility that pretonic lengthening simply was a natural sound change, the issue of conditioning remains, as not every pretonic vowel in an open syllable was lengthened. The development of the three originally short vowels in pretonic open syllables has been discussed in detail by Garr (1987). While we will depart from Garr's account on several points, his general conclusions adequately cover the data. They are as follows:

- *a is lengthened to *ā in all pretonic open syllables, e.g. *dabā́r- > *dābā́r- > *då̱b̲ǻr* 'word', *dagī́m > dāgī́m > *dåg̲ím* 'fish (pl.)'.
- *i in an open syllable which is not separated from the following stressed syllable by a morpheme boundary is lengthened to *ē (having changed to *e first) before *a but reduced to schwa and later lost elsewhere. Examples: *libā́b- > *lebā́b- > *lēbā́b- > *leb̲ǻb̲* 'heart', but *d̲irṓʿ- > *d̲ərṓʿ- > *zróăʿ* 'arm'.
- If a morpheme boundary separates *i from the following syllable, it is lengthened to *ē if the *preceding* syllable is light (CV) or if the syllable containing *i is word-initial, but *i is lost if the preceding syllable is heavy (closed or containing a long vowel). Examples: *d̲aqinī́m > *d̲aqenī́m > *d̲aqēnī́m > *zqením* 'old (m.pl.)', *ʾilī́m > *ʾelī́m > *ʾēlī́m > *ʾelím* 'gods', but *ʾillimī́m > ʾilləmī́m > *ʾillmím* 'mute (m.pl.)', *yōt̲ibī́m > *yōt̲əbī́m > *yošb̲ím* 'sitting (m.pl.)'.

- *u behaves like *i, with two exceptions: instead of being lengthened, *u is preserved with gemination of the following consonant, and in the word-initial syllable, pretonic *u before a morpheme boundary is reduced. Examples: *luqáḥ > *loqáḥ > *loqqáḥ > *luqqáḥ* 'it was taken', *ʾadumíḿ > *ʾadomíḿ > *ʾadommíḿ > *ʾăḏummím* 'red (m.pl.)', but *mutíḿ > *mətíḿ > *mṯím* 'men', *bukúr- > *bəkúr- > *bḵór* 'firstborn', *qudqudó́ > *qodqədó́ > *qɔḏqḏó* 'his cranium'.

  The reduction of *u in a word-initial syllable before a morpheme boundary is based on only one example, that of *mṯím*, reconstructed as *mutíḿ. The reconstruction of *u in this word, however, is uncertain: the various cognate forms are also compatible with a reconstruction as *mtum, similar to *smum 'name' and *bnum 'son' (see below), and the word is not attested in Arabic, where we might expect to see different reflexes for *mtum and *mutum. The conditioning of pretonic lengthening may thus be simplified by reconstructing this word as *mtum, plural *mtīma, and stating that both *i and *u before a morpheme boundary underwent pretonic lengthening when not preceded by a heavy syllable.

  Fox (2003: 285) reconstructs the Hebrew colour terms like *ʾåḏóm* as *qaṭullum adjectives, based on the semantically related verbal stem IX in Classical Arabic, which also has a geminate third radical: perfect *ifʿalla*, imperfect *yufʿillu*. If that is correct, the gemination in forms like *ʾăḏummím* is not due to pretonic lengthening, but other cases like *ʿamuqíḿa > *ʿămuqqím* 'deep (m.pl.)' remain.

It is interesting to note the different behaviour of *i and *u before non-low vowels, depending on whether a morpheme boundary intervenes. This may be explained by positing two waves of reduction, one affecting *i and *u in open syllables preceding non-low vowels, and one affecting *i and *u in open syllables following heavy syllables, regardless of the following vowel. In between these two sound changes, *i and *u could have been analogically restored if and only if they were preserved in other parts of the paradigm, e.g. *ḏaqiníḿa > *ḏaqəníḿa (first reduction) >> *ḏaqiníḿa (analogically restored based on the singular *ḏaqín-) > *ḏaqēníḿ. Reductions within a single morpheme, however, could not be analogically undone, resulting in cases like *ḏirōʿ- > *ḏərōʿ-. This first reduction may already be attested in the Amarna Canaanite form *zu-ru-uḫ* 'arm (construct)' (EA 288:14), possibly reflecting /zərṓʿ/; if so, it is a very early development.

The most important category that does not behave according to these rules is that of imperfect verbs with the *nun paragogicum*, i.e. those that preserve the old verbal endings *-ún* and *-ín* < *-ű́na and *-ī́na. These suffixes are always stressed, and the vowel of the preceding syllable is usually reduced in context and lengthened *in pausa*, whether it comes from *a, *i, or *u. Thus, we find *yiškb̠ún* 'they will lie' in context, but *yiškåb̠ún* 'idem' *in pausa*, both from *yiskabű́n, and similarly, *yid̠rk̠ún* 'they bend' < *yadrokű́n in context, but *yilqoṭún* 'they will gather' < *yalqoṭű́n *in pausa*. Garr attributes this to the broader application of pretonic lengthening *in pausa*. As other words with pretonic *i after a heavy syllable also tend to lengthen that vowel *in pausa*, we may accept that pretonic lengthening applied to *i and *u regardless of the syllable structure of the preceding syllable in this prosodic environment. Rather than postulating contextual non-lengthening in *yiskabű́n > *yiškb̠ún*, these forms with non-lengthened *a should be seen as analogical: pausal *yiqṭolún* : contextual *yiqṭlún* = pausal *yiqṭålún* : contextual *yiqṭlún*. This also explains why *yiqṭålún* forms are still found in context, like *yiš›ålún* 'they will ask' in Josh 4:21.

In some adjectives, *i after a heavy syllable is pretonically lengthened in context forms. Garr notes that these forms with lengthened vowels are more commonly used independently, while predicatively used adjectives tend to reduce their vowel, as in *yoled̠̊å* 'woman giving birth' vs. *yold̠̊å* 'giving birth (f.sg.)', both from *yōledā́. This is statistically borne out by the evidence given in Ben-David (1993). These nominalized adjectives with unexpected pretonic lengthening are best explained as analogical extensions of the masculine singular stem, where *i became *ē through tonic lengthening.

Several other exceptional developments listed by Garr must be considered in more detail. He attributes the occurrence of forms like *nimṣ›ím* 'present (m.pl.)' when the word is closely connected to the following word besides forms like *nimṣå›ím* 'idem' in other positions to the contextual/pausal distinction discussed above, but as is shown by Rubin (2008: 126), these are the result of "an idiosyncratic sound rule which affects masculine plural niphal participles of *lamed-›aleph* roots when one of the root letters is a voiced labial", not reflecting a general sound change.[16] On page 136, Garr claims that pretonic *a is regularly reduced in *qaṭiltum and *qaṭultum nouns, but none of his examples can securely be recon-

[16]On the other hand, the reduction of *a in Garr's other example of prosodic non-lengthening, *kikkráyim* 'two talents' < *kikkaráym, may well be the result of a construct state-like intonation with little or no stress, given the context.

structed as having had *a, except for *ḥămé̆šɛ̱t* 'five (m. construct)', which should not undergo pretonic lengthening anyway, as it is a construct form. Nevertheless, the absence of *qåṭélɛ̱t* and *qåṭólɛ̱t* forms in Hebrew, the non-reconstructibility of a *qiṭil(t)um pattern for Proto-Semitic (Fox 2003: 287), and the nice semantic match between *ʾåmén* 'surely' < *ʾaminam and *ʾĕmɛ̱́t* < *ʾamintum? 'truth' support the possibility that *qaṭiltum and *qaṭultum patterns did not undergo pretonic lengthening; we might also include the case of *nḥóšɛ̱t* 'bronze', if this should be reconstructed with the same *a in the first syllable as the corresponding masculine *hapax nåḥúš* 'idem' (Job 6:12). Whether this was a phonological or morphological change is hard to determine. It may result from the analogical spread of what was originally the non-absolute form of the stem, as is suggested by the *-t- form of the feminine suffix; see the more detailed argumentation in section 7.2.7. Finally, Garr's assertion that *mnǻ̱t* 'portion' and **qṣǻ̱t* 'end' are not Aramaic loanwords, but regular Hebrew developments of *manawát- and *qaṣawát-, is to be rejected. It requires pretonic lengthening to have operated before the contraction of triphthongs (see chapter 5), but this is contradicted by forms like *śå̱ḏó̱t* 'fields' < *śādṓt < *śadṓt- < *śadayṓt-.

Only a few forms remain which do not obey the rules stated so far. Garr rightly excludes (p. 136, n. 32) the forms like *bní* 'my son' and *šmí* 'my name', which do not show a lengthened vowel, as they did not contain an *i in the stem: as argued by Testen (1985), *bén* 'son' and *šém* 'name' should be reconstructed as *bnum and *smum (cf. Classical Arabic *ibnun*, *ismun*), respectively, which explains their different behaviour from *ʾél* 'god' < *ʾilum and *ʿéṣ* 'wood' < *ʿiṣum (Goetze 1939: 444, n. 36). The latter two do regularly show pretonic lengthening before suffixes, as in *ʾelí* 'my god', *ʿeṣǻh* 'its wood'.

We will conclude with Garr's note on page 140, where he mentions the cases of pretonic *i > *e* before high vowels following ʾ, listed in table 4.6.[17] This development has traditionally been explained as the result of Aramaic influence: in Biblical and Targumic Aramaic, both reduction and retention of unstressed vowels following word-initial ʾ is attested, and in Syriac, these vowels are regularly

[17] *ʾelón* 'great tree', listed by Garr, should be reconstructed as *ʾaylṓn, not *ʾilṓn, as is evidenced by the alternative form *ʾallón*, with assimilation of *-yl- > *-ll-* (Garnier & Jacques 2012). *ʾissår* is an Aramaic loanword (Wagner 1966: 28). The reconstruction of *ʾĕmɛ̱́t* as *ʾimitt- is based on the Greek transcription in the Hexapla, ημεθ (Brønno 1943: 155–157), which reflects /ʾēmet/, presumably with a different development of pretonic *ʾi- in this case than in the Tiberian tradition. If the non-lengthening of pretonic *a in *qaṭiltum nouns mentioned above is accepted, *ʾĕmɛ̱́t* and *ʾărɛ́šɛ̱t* are rather to be reconstructed with *ʾa- than with *ʾi-.

Table 4.6: Pretonic *ʾi-

BH	meaning
*ʾi- > ʾ*e-*	
ʾ*eḇús*	‘manger’
ʾ*ezóḇ*	‘hyssop’
ʾ*ezór*	‘loincloth’
ʾ*eṭún*	‘linen’
ʾ*ep̄óḏ*	‘ephod’
ʾ*emún*	‘faith’
ʾ*esúr*	‘fetters’
*ʾi- > ʾɛ̆-, *ʾ*ă-*	
ʾ*ăḇóy*	‘uneasiness’
ʾ*ɛ̆ḡóz*	‘nut tree’
ʾ*ɛ̆wíl*	‘fool’
ʾ*ɛ̆lóăh*	‘god’
ʾ*ɛ̆líl*	‘idol’, ‘uselessness’
ʾ*ɛ̆mɛ́ṯ*	‘truth’
ʾ*ɛ̆nóš*	‘man(kind)’
ʾ*ărón*	‘ark’
ʾ*ărɛ́šɛṯ*	‘desire’

retained (Brockelmann 1908: 110). The Biblical Hebrew situation may then be the result of inconsistent application of this Aramaic pronunciation. The difficulty of formulating a phonetic conditioning that governs the reflex of pretonic *ʾi- can be seen from the different outcome of ʾ*ɛ̆mɛ́ṯ* vs. ʾ*emún*, ʾ*ăḇóy* vs. ʾ*eḇús*, or ʾ*ɛ̆nóš* vs. ʾ*ezór*, which show that neither the following consonant nor the following vowel, taken by themselves, can account for the distribution. Additionally, different reflexes are present within the same word as found in different sources: contrary to the Leningrad Codex’s ʾ*ăḇóy*, ʾ*ɛ̆ḡóz*, and ʾ*ɛ̆mɛ́ṯ*, other manuscripts have ʾ*eḇóy* and ʾ*eḡóz* (Koehler & Baumgartner 1994–2001: 4, 10), and the Hexapla has ημεϑ (Brønno 1943: 155). Thus, word-initial ʾ*ɛ̆*-/ʾ*ă*- and ʾ*e*- seem to have been in free variation.

Dating

If the Amarna form *zu-ru-uḫ* ‘arm (construct)’ (EA 288:14) reflects the initial reduction of *i (and presumably *u) before non-low vowels that also affected

pre-Hebrew, this reduction must predate the composition of the Amarna Letters in the fourteenth century BCE. Accepting Garr's statement that it was the quality of the following vowel (non-low) that conditioned the reduction rather than its quantity (long), we must place it at a later date than the Canaanite Shift, as *ō < *ā behaves like a non-low vowel. Pretonic lengthening itself must postdate the change of *i > *e and predate its own first attestation in the Septuagint (third century BCE).

4.4.4 Conclusion on pretonic lengthening

Phonetically, pretonic lengthening is not as mysterious as it has been made out to be, and no convoluted explanation involving secondary stress or language contact is necessary. It can be broken up into the following sound changes:

1. At some point before pretonic lengthening was operative, but after the operation of the Canaanite Shift, *i and *u in open syllables were reduced to *ə before a following stressed non-low vowel. If a morpheme boundary intervened between the original *i or *u and the stressed vowel, the reduced vowel was analogically restored.

2. Before pretonic (and tonic) lengthening took place, *i and *u shifted to *e and *o, respectively.

3. Pretonic lengthening may have taken place at any point before the third century BCE. In an open syllable preceding a stressed vowel, *a > *ā. In that position, *e > *ē, except when following a heavy syllable. *o in the same environment caused gemination of the following consonant. Pretonic *e and *o in open syllables may have been lengthened *in pausa*.

4. Word-initial *ḥåṭɛp̄* vowels following ʾ were irregularly replaced by *e* under Aramaic influence.

4.5 Pausal lengthening

Of the developments discussed in this chapter, pausal lengthening is the least controversial. There is a broad consensus that it is the result of the lengthening of the stressed vowel of words in sentence-final position. This lengthening took

place before most of the stress-shifting processes discussed in section 4.2 above. Accordingly, it is the originally penultimate syllable that is lengthened, as in *qaṭála > *qåṭ́ål* (vs. contextual *qåṭál*), *qaṭálū > *qåṭ́ålu* (vs. contextual *qåṭlú*).

Bergsträsser (1918: 162) believes that pausal lengthening must have taken place in the synagogal recitation, finding it improbable that such a change would have affected the spoken language. Experimental research conducted on currently spoken languages, however, has shown that the lengthening of phrase-final words is a normal prosodic effect (Nooteboom 1997: 658). It is true, though, that it is hard to imagine the creation of phonologically distinct pausal forms such as those of Biblical Hebrew in a living language, as speakers would probably analogically introduce the more frequent context forms into pausal position. We will examine the dating of pausal lengthening after a consideration of the difference between major and minor pausal forms.

4.5.1 Major and minor pause

The existence of separate minor pausal forms, used in phrase-final[18] but not sentence-final position, has long been recognized for two words, *ʾáttå* 'you (m.sg.)' (vs. contextual *ʾattǻ* and major pausal *ʾǻttå*) and *ʿáttå* 'now' (vs. contextual *ʿattǻ* and major pausal *ʿǻttå*). Revell (1981) notes the occurrence of pausal forms of *qaṭṭum and *qaṭyum nouns, *qåṭ* (discussed in section 4.3 above) and *qɛ́ṭi*, respectively, within sentences, but does not explicitly identify them as minor pausal forms. Given their distribution, though, they appear to be just that. Pausal forms within a sentence also occur with words that originally stressed short vowels in open, penultimate syllables, such as *ʾǻni* 'I' (contextual *ʾănî*), e.g. in Gen 27:34, or the second person masculine singular possessive suffix *-ɛ́k̲å* (contextual *-k̲ǻ*), e.g. in Deut 5:14.

While only two words can truly be said to have three separate forms for contextual, minor pausal, and major pausal positions, then, the distinction between minor and major pause also applies to the rest of the lexicon. The difference is that some words show the same form in minor and major pause, while the minor pausal form is identical to the contextual form in others. Words which have undergone tonic lengthening have the same form in all three prosodic positions. The distribution of these different forms may be illustrated as in table 4.7. *qaṭṭum nouns have

[18] I.e. at the end of an intonation phrase, a prosodic unit that does not necessarily completely correspond to any single syntactic unit.

Table 4.7: Contextual, minor and major pausal forms of words from different phonotactic categories

environment	*-V́C₁C₂- 'silver'	*-V́C₁C₁V̄ 'you (m.sg.)'	*-V́Cy- 'fruit'	*-V́CV̄ 'I'	*V́CV- 'word'
context	*kέsεp̄*	*ʾattǻ*	*prí*	*ʾăní*	*dåb̠ǻr*
minor pause	*kέsεp̄*	*ʾáttå*	*pέri*	*ʾǻni*	*dåb̠ǻr*
major pause	*kǻsεp̄*	*ʾǻttå*	*pέri*	*ʾǻni*	*dåb̠ǻr*

been excluded from this overview, as their behaviour differs per individual lexeme (see section 4.3.4).

This distribution can be explained by the following two pausal lengthening rules (and the stress shift rules discussed in section 4.2), which must have operated before the stress shift from a short vowel in an open syllable to a following word-final vowel, but after the change of *VCy > *VCi.

1. In minor (and major) pause, all stressed vowels in open syllables were lengthened. Thus, *ʾánī > *ʾā́nī, etc.

2. In major pause, all stressed vowels were lengthened. Thus, *kásp > *kā́sp, *ʾáttā > *ʾā́ttā, etc.

4.5.2 Dating

Evidence for the dating of pausal lengthening is found in the Greek transcription of the Hexapla. Unlike tonic and pretonic lengthening, which seem to have operated similarly in the reading tradition underlying the Hexaplaric text and that of the Masoretic Text, pausal lengthening is only attested in some cases in the former document.

Stressed vowels in open syllables undergo pausal lengthening in the Hexapla, as is shown by forms like ιδαββηρου 'they speak' (Ps 35:20, Tiberian *yd̠abbéru*) and ιεσμωρου 'they keep' (Ps 89:32, Tiberian *yišmóru*; Brønno 1943: 429). Those in doubly closed syllables do not: segolates, for instance, do not have a separate pausal form (p. 430). The evidence concerning singly closed syllables is ambiguous: ϑηληχ 'you (m.sg.) will go' (Ps 32:8, Tiberian *telek̠*) shows a long vowel, while εχαζεβ 'I will lie' (Ps 89:36, Tiberian *ʾăk̠azzeb̠*) does not. Brønno interprets ϑηληχ

Table 4.8: The origin of Hexaplaric pausal forms according to Janssens (1982)

stage	3m.pl. pf.	
	context	pause
proto-form	*qaṭálū	*qaṭálū
pretonic lengthening	*qāṭálū	*qāṭálū
contextual stress shift	*qāṭalū́	*qāṭálū
tonic lengthening	*qāṭalū́	*qāṭā́lū
reduction	*qāṭəlū́	*qāṭā́lū

as the regular form, as he already assumes pausal lengthening to have operated in this environment based on its supposed extension into contextual nominal forms with tonic lengthening; εχαζεβ is then an extension of the context form to a pausal position. Janssens (1982: 63–64), on the other hand, sees ϑηληχ as an erroneous form and concludes that pausal lengthening did not operate in closed syllables – in fact, he denies the Hexapla any operation of pausal lengthening at all. Instead, in his view, it is tonic lengthening which is responsible for forms like ιδαββηρου. In pause, he argues, stress did not shift from the penultimate syllable, and the stressed vowel was subsequently regularly lengthened *in pausa*, but not in context, as shown in table 4.8.

As may be seen from this table, Janssens assumes that tonic lengthening was not conditioned by the length of the following syllable. This is contrary to the formulation of tonic lengthening that was arrived at in section 4.3 above. While it is true that Janssen's account also arrives at the actually attested forms, it relies on a difference in accentuation between context forms and pausal forms, with no lengthening originally involved. No reason why only context forms should shift their accent forward is apparent, although a few such unmotivated stress shifts are attested (see section 4.2). It makes more sense to assume that pausal lengthening of stressed vowels in open syllables, a common crosslinguistic development, took place first, thereby providing the circumstances that maintained the stress on the penultimate syllable *in pausa* (as in table 4.9). Additionally, Janssens's explanation only works if pretonic lengthening preceded tonic lengthening, which is uncertain.[19]

[19]In table 4.9, pretonic lengthening similarly precedes pausal lengthening, but reversing their order would not affect the outcome.

Table 4.9: The origin of pausal forms in words with stressed open syllables

stage	3m.pl. pf.	
	context	pause
proto-form	*qaṭálū	*qaṭálū
pretonic lengthening	*qāṭálū	*qāṭálū
minor pausal lengthening	*qāṭálū	*qāṭ́álū
stress shift	*qāṭalú̯	*qāṭ́álū
reduction	*qāṭəlú̯	*qāṭ́álū

Regardless of the origin of pausal lengthening in open syllables, Janssens may be right that the Hexapla does not show tonic lengthening in any closed syllables. If that is the case, a parallel with the separate treatment of open and closed syllables in minor pause found in Tiberian Hebrew (see the previous section) suggests itself. Assuming the Tiberian reading tradition goes back to one that was very similar to that reflected in the Hexapla – an assumption that seems warranted as long as it does not contradict the facts – it appears that what we may call minor pausal lengthening, i.e. the lengthening of stressed, short vowels in open syllables in both minor and major pause, predates the writing of the Hexapla, while major pausal lengthening, i.e. the lengthening of all stressed vowels in major pause, postdates it. The only form that does not fit this explanation is βεχι 'weeping' (Ps 30:6), which corresponds to (minor) pausal *bɛ́k̲i* in the Masoretic Text. It seems simpler to assume that the Hexapla reflects a context form /bək̲í/ here than to postulate a different operation of pausal lengthening in these two reading traditions based on this one form.

As for the relative chronology of pausal lengthening and other sound changes that interacted with it, minor pausal lengthening preceded most other sound changes affecting the short vowels, with the exception of the shift of *i > *e and *u > *o, as well as the change of word-final *y > *i after consonants. Major pausal lengthening must precede the change of *ā > *a̋. The effects of major pausal lengthening on non-a vowels were largely obscured by the subsequent phonetic lengthening of all accented vowels, but they can still be seen in the change of short *e and *o > *a before word-final guttural consonants vs. the insertion of *páṯaḥ furtivum* between long non-a vowels and word-final gutturals, as in contextual *šāmé꞉ > *šåmá꞉* 'he heard' vs. pausal *šāmé̋꞉ > *šåméă꞉* 'idem'.

4.5.3 Conclusion on pausal lengthening

The simplest way to account for all the data, then, is to posit two separate processes of pausal lengthening:

1. Minor pausal lengthening: stressed short vowels in open syllables were lengthened in minor and major pause, i.e. when the word containing them occurred at the end of an intonational phrase. This sound change postdated the change of *i, *u > *e, *o and that of *y > *i /C_# and predated the stress shift from short vowels in open syllables to following open syllables. It is attested in the Hexapla and thus predates the third century CE.

2. Major pausal lengthening: all stressed short vowels were lengthened. This sound change postdates the third century CE and predates the change of *ā > *å̊ in the Tiberian pronunciation, as well as the change of short *e and *o > *a* before a word-final guttural.

4.6 Summary

Having considered the history of the Hebrew stress system and the three lengthening processes that are conditioned by the stress, we will now review the most important findings and give a broad relative chronology, indicating how these sound changes relate to other developments and to each other.

While tonic, pretonic and pausal lengthening could all be formulated in ways that explain their occasional non-operation based on phonetic conditioning factors, several processes involving the position of the accent seem to be irregular. These processes are the prosodically motivated retraction of the accent known as *nsigå* and the stress shifting to the verbal ending in the first and second person singular consecutive perfect and, in hollow verbs, in other forms too. All three of these processes are closely tied to the text of the Hebrew Bible as it was codified, and as they do not interact with any other changes,[20] they may well be late developments, only having taken place in the reading tradition after Hebrew had died out as a spoken language. In this case, their seeming irregularity may be due to invisible prosodic conditioning. The apparently free variation between *ḥăṭep̄* vowels and *e* after word-initial ʾ must also be a late development, postdating the elision of

[20] Except for the change of unstressed *e, *o > *ɛ, *ɔ in closed syllables, which is triggered by *nsigå*.

unstressed short vowels in open syllables in the third century CE. The alternation between *qaṭ* and *qåṭ* reflexes of *qaṭṭum nouns, on the other hand, cannot be adequately described due to the incompleteness of the data, but it may be regularly conditioned by an interplay of phonetic and prosodic factors.

The other developments can be incorporated in the following timeline (see the relevant sections above for the precise conditioning of each change and a discussion of the exceptions):

1. At some point before the contraction of triphthongs, the stress was fixed on the penultimate syllable of every word (excluding clitics and construct states, which were unstressed). This syllable would remain stressed in most cases.

2. *i and *u in open syllables were reduced to schwa when preceding a stressed non-low vowel. This explains why they did not later participate in pretonic lengthening in this position. Where a morpheme boundary intervened between *i or *u and the stressed vowel, they were analogically restored.

3. *i and *u shifted to *e and *o, respectively. This is a purely phonetic change, but it caused the lengthened versions of these vowels to merge with *ē and *ō rather than *ī and *ū.

4. After the change of *i and *u to *e and *o, tonic lengthening took place. This sound change may be formulated as *$\acute{\breve{\text{V}}}$CV̆ > *$\acute{\text{V}}$CV̆. When tonic lengthening was operative, only nouns in the absolute state had maintained their word-final vowels, which had been protected from the first apocope of word-final short vowels by the presence of mimation. Tonic lengthening must have antedated the second apocope, which deleted these vowels, which had become word-final due to the loss of mimation.

5. Pretonic lengthening may have taken place at any point between the change of *i and *u to *e and *o and the creation of the Septuagint (third century BCE). Pretonic *a in open syllables was regularly lengthened to *ā, *e was lengthened to *ē, except when following a heavy syllable, and *o caused gemination of the following consonant when not following a heavy syllable.

6. Minor pausal lengthening affected short, stressed vowels in open syllables in phrase-final position. It must postdate the change of *i and *u to *e and *o and the change of word-final *-Cy > *-Ci, but predate the stress shift from

short vowels in open syllables to the following vowel. It is already attested in the Hexapla and must therefore predate the third century CE.

7. Major pausal lengthening affected all short, stressed vowels in sentence-final words. It took place after the third century CE and before the Tiberian change of *ā > *å̊. It also antedated the assimilation of *e and *o > *a before word-final gutturals, as well as Blau's Law.

8. The phonetic lengthening of all accented vowels finally obscured much of the operation of tonic and pausal lengthening, but the results of these sound changes can still be seen in the Masoretic Text as differences in the position of the stress and alternating vowel qualities.

5 Diphthongs and triphthongs

5.1 Introduction

The combination of a vowel and either one of the semivowels *w and *y in the same syllable is traditionally referred to as a diphthong in Semitic linguistics, although it is unclear to what degree these combinations behaved like single vocalic phonemes, as the term 'diphthong' implies. Similarly, the combination of two vowels with an intervening semivowel is frequently called a triphthong; strictly speaking, this is incorrect, as 'triphthong' usually describes a single phoneme with three vocalic places of articulation occurring within the same syllable, while Semitic triphthongs are always disyllabic. To avoid confusion, however, the traditional terminology will be maintained in this chapter. In addition to the conventional representation of any vowel by V and any consonant by C, W will be used to indicate any semivowel, i.e. *w or *y.

Diphthongs and triphthongs are often treated together, but as we shall see, they are better considered separately. Accordingly, the first section of this chapter will investigate the development of the original diphthongs *aw and *ay. The other diphthongs are not discussed, as their development is either unproblematic or very difficult to ascertain. Quite clearly, *iy > *ī and *uw > *ū, as in *yiynaqu > *yīnaq > *yinåq* 'he will suck' (pause)', *huwrada > *hūrad > *huraḏ* 'he was brought down'. *uy seems to develop to *ī, but the evidence is limited to a few forms like *yisåḵ* 'it may be poured (pause)' in Ex 30:32 and <wyyšm> 'and he/it was placed' (vocalized *wayyíśɛm* in Gen 50:26 and *wayyuśam* in Gen 24:33), most other cases of *uy having been affected by analogy. Although these forms are not from roots with *y as an original radical, the neutralization of I-y roots and II-wy roots in the *hip̄ʿil* perfect, e.g. *haynīq > *hēnīq and *heqīm > *hēqīm, led to the analogical reshaping of II-wy *hɔp̄ʿal* and passive *qal* forms (like the examples given) based on the model of I-y roots: thus, *yisåḵ* < *yuysaku. Moving on to the other diphthongs, Blau (2010: 97) holds that *iw > *ū, while Bauer &

Leander (1922: 201) believe that it developed to *ī. Again, analogy has heavily clouded the picture, but *yiwkalu > *yūkal > *yuḵal* 'he will be able' does seem to show that *iw > *ū, although this reconstruction has recently been challenged by Huehnergard & Olyan (2013).[1] Diphthongs where the semivowel preceded the vowel, when preceded by another consonant, had already lost their semivowel with compensatory lengthening of the vowel in Proto-Semitic: *CWV > *CV̄, as in *ʾaḫwatum > *ʾaḫātum > *ʾåḥoṯ* 'sister' (Brockelmann 1908: 186). *aW diphthongs, however, show different reflexes: cf. *báyiṯ* 'house' vs. *beṯi* 'my house' vs. *báytå* 'to a house', all from *bayt-, or the different reflex of *aw in *ṯawr- > *šor* 'ox' vs. *mawt- > *mǻwɛṯ* 'death'.

After the diphthongs, we will examine the triphthongs. Triphthongs with a long first vowel remain uncontracted, e.g. *banū́yum > *bånuy* 'built (m.sg.)', so only triphthongs with a short first vowel will be covered. As their Biblical Hebrew reflexes have already been adequately described, the discussion will focus on the phonetic details of their contraction, as well as this contraction's place in the relative chronology and its interaction with other sound laws. The chapter closes with a brief investigation into one such related change, the loss of mimation, followed by a summary of the conclusions reached on the development of both diphthongs and triphthongs.

5.2 Diphthongs

5.2.1 Previous suggestions

The most important observations on the behaviour of original diphthongs – in the twentieth century, at least – were made by Brockelmann (1908), Bergsträsser (1918), and Bauer & Leander (1922). As the differences between their accounts are minor, we may treat them in the same section, taking them as representative of the traditional view on the development of the diphthongs.

[1] I am hesitant to accept their analysis of *yuḵal* as a *hɔpʿal* or passive *qal*, originally meaning 'he will be enabled', as the introduction of such a derived form seems unmotivated. Nor does this account for the less grammatical meaning of *ykl* 'to prevail' in Hebrew and Aramaic, while this could plausibly have given rise to the semantically bleached 'to be able' (H. Gzella, personal communication). Given the traces of biradicality many I-w roots show throughout Semitic, it may be easier to explain *khl, attested in other Semitic languages, and *wkl as two separate extensions of an originally biconsonantal root *kl 'to be able', parallel to such well-known cases as Hebrew *yṭb* ∼ *ṭwb*, both 'to be good'; the original, biconsonantal root is still reflected in *ṭoḇ* < *ṭābum 'good'.

Brockelmann (1908: 191–192) believes that the preservation or contraction of the diphthongs was conditioned by phonotactic factors. *ay was preserved in stressed, closed syllables (i.e. closed after the second loss of final short vowels), as in *báyt > *báyiṯ* 'house'. *aw was preserved in stressed syllables, not necessarily closed ones, as in *máwt > *mo̊wɛṯ* 'death'. Brockelmann does not give any clear examples of *aw being preserved in stressed open syllables; if *šáwʾ > *šåw* 'falsehood' is to be considered an open syllable due to the loss of the final *ʾ, the same could be said for *gáyʾ > *gay* 'valley'. Either way, unstressed *ay and *aw were contracted to *e* and *o*, respectively: *bayt > *beṯ* 'house (construct)', *hawdá > *hoḏå* 'he praised'. In stressed, open syllables, Brockelmann sees *ay > ɛ as the regular development, as in *dabaráykā > *dḇårɛ́ḵå* 'your (m.sg.) words', while the *e* in forms like *dabaráynū > *dḇårénu* 'our words' is an analogical extension from forms with unstressed diphthongs like *dabaraykénna >*diḇreḵɛn* 'your (f.pl.) words'.

Brockelmann notes some exceptions to these rules. *ʾáyna > ʾån 'where' is the only case of *ay > *å*, which Brockelmann attributes to the fact that this word lost its case vowel earlier than nouns did. *yom* 'day', *šoṭ* 'whip', and *ṣom* 'fast' for **yo̊wɛm*, **šo̊wɛṭ*, and **ṣo̊wɛm*, respectively, are explained as analogical extensions of the construct state. Conversely, *báytå* 'to a house' and *láylå* '(at) night' preserve their diphthong due to analogy with the forms without the *he locale* suffix, *báyiṯ* and *láyil*, respectively. Finally, the preservation of *ay in the originally unstressed oath particle *ḥay* 'as (...) lives' when preceding the tetragrammaton and other words indicating God (the word is vocalized as *ḥe* elsewhere) is attributed to the initial *y- of the former. After it was preserved in that environment, it was analogically extended to other 'divine' contexts.

Bergsträsser (1918: 97–99) disagrees with Brockelmann in several respects. According to Bergsträsser, both *ay and *aw were preserved in stressed, closed syllables, and also in word-final position, when stressed, as in *måṯay* 'when' < *mataý.[2] *ay and *aw were also preserved before *y and *w in the next syllable,

[2]Blau (2010: 101) notes that the reconstruction *mataý is problematic, because of the rule dictating that, before the first loss of final short vowels, all words were stressed on the penultimate syllable: *mátay. He argues that the word should be reconstructed as *matáya, with the *y preserved due to analogy with its supposedly regular preservation *in pausa*, and supports this reconstruction with the Classical Arabic cognate form, *matā*, which "has to be derived from **mataya* as well, since **matay* would not have changed." This is uncertain, however: there are no other cases of truly word-final *-ay that can show the regular reflex of this combination in Classical Arabic (with the possible exceptions of *ʾilay > ʾilā 'to' and *ʿalay > ʿalā 'on', see section 8.2.1). Blau may be thinking of the dual oblique construct state ending *-ay > Classical Arabic *-ay*, but as

respectively, as in *ṣawwe* 'command (m.sg.)', *ḥayyim* 'life'. In open, word-internal syllables, the regular development is *ay > *e*; thus, *dḇårénu* 'our words' has the regular reflex of *ay, while *dḇåréḵå* 'your words' and similar forms have assimilated *e > ɛ due to the *å* in the following syllable. Additionally, Bergsträsser lists some exceptional cases of unstressed *ay > *i*, as in *ʿayráhu > *ʿiro* 'his donkey'. These are all *hapax legomena*, and the irregular reflex in these few words may be due to scribal error.[3]

Bauer & Leander (1922: 202–205) mainly agree with Brockelmann. Noting that diphthongs which were preserved in Biblical Hebrew were contracted in Amarna Canaanite, e.g. *ša-me-ma* 'heaven' (Biblical Hebrew *šåmáyim*), they argue that contraction of diphthongs in all positions was a feature of the 'old layer' underlying Hebrew in their mixed language account. In some cases, the 'old' form was preserved in Biblical Hebrew, as in *ḥel* 'rampart', *ḥeq* 'lap', *lel* 'night', *meṯ* 'dead (m.sg.)', *ger* 'sojourner', and *leṣ* 'scoffer'. They also see this as a possible origin of the words with unexpectedly contracted *aw, although this may also be due to paradigmatic leveling. Dialect borrowing is also suggested as the origin of irregular forms like *ʾån* 'where'. Finally, they note some analogical changes, e.g. that of *réɛwaḥ* 'space', analogically reformed after strong segolates with a guttural third radical like *mélaḥ* 'salt'.

We may accept some of the conclusions reached by these earlier scholars. Diphthongs in open syllables were indisputably contracted. Due to the nature of Semitic syllable structure, all the syllables these authors refer to as 'open' are word-initial (in polysyllables) or word-internal, and that may be a more relevant factor than syllable structure. Thus, diphthongs in non-word-final syllables (after the second loss of word-final vowels) were contracted; that the few exceptions like *láylå* '(at) night' are based on an analogy with corresponding forms like *láyl > *láyil* 'night' is a plausible explanation. It is more economical to agree with Bergsträsser, against Brockelmann, that stressed, non-word-final *ay originally contracted to *ē > *e*, which only became ɛ if the following syllable contained *å*, because there is no

the construct forms a phonological word with its governing noun, *-ay is not truly word-final here; alternatively, *-ay* in the construct state could have been restored through analogy with suffixed forms (Al-Jallad forthcoming). The Arabic evidence, then, does not contradict a reconstruction like *matay. As Blau states, this word should have been stressed on the penultimate in an earlier stage of Hebrew, but the position of the accent regularly changed due to the subsequent stress shift from *mátay > *matáy > *måṯáy* also seen in forms like *yáśem 'let him place' > *yaśém > *yåśém* (see chapter 4).

[3]Alternatively, Steiner (2007a) believes that these are dialectal, Northern forms, preserved in "the poetic dialect".

motivation for what Brockelmann sees as the analogical intrusion of *e* in forms like *dḇårénu* 'our words', while the conditioning factor changing *e > ɛ in cases like *dḇåréḵå* 'your (m.sg.) words' is clearly present.

As we have seen elsewhere, the mixed language hypothesis put forward by Bauer & Leander (1922) is to be rejected. The 'old' forms with seemingly contracted diphthongs in stressed, word-final syllables which they draw attention to may be explained in an alternative fashion. Strikingly, nearly all of the words like *ḥel* 'rampart' for which this can be determined are from II-w roots.[4] We should not expect these roots to form nouns like *ḥaylum in the first place. Given the parallel with the verb *meṯ* 'he died' < *mawita, it is more likely that these words should be reconstructed as *qaṭilum nouns: *ḥawilum > *ḥel*, etc. Thus, they are explained by the rules governing the development of triphthongs arrived at below. With these words excluded, stressed *ay in word-final syllables can regularly be seen to develop to *áyi* in closed syllables, while it is simply preserved as *ay* if no consonants follow. The single remaining exception is *ʾån* 'where'. As Ugaritic <an> 'wherever, everywhere' shows, this word need not go back to *ʾáyna, which would have yielded Ugaritic /ʾēn/ **<in>. The latter form is indeed attested, but only in the meaning '(there is/are) no', cognate with Biblical Hebrew *ʾáyin* 'non-existence' with the regular development of *ay. If we want to derive *ʾån* and <an> from the same root as *ʾáyin*, *ʾayana is a plausible reconstruction that regularly yields the attested forms.

This leaves us with the words with contracted *aw. While they could be reconstructed as *qaṭulum nouns, similar to the *qaṭilum > *qel* nouns discussed above, cognate evidence frequently supports a reconstruction as *qaṭlum nouns, e.g. *yom* 'day' besides Classical Arabic *yawmun* < *yawmum, *šor* 'ox' besides Classical Arabic *ṯawrun* < *ṯawrum. Brockelmann's proposal that the Hebrew forms with *o* are analogically extended from the construct state is an unlikely one. First, the construct state is less basic than the absolute state: we should expect the absolute state to exert analogical influence on the construct, not vice versa. Second, the less frequent a form is, the more susceptible it is to being analogically replaced.

[4]For *ḥel*, cf. *yåḥul* 'it will turn' and Classical Arabic *ḥawla* 'around'. For *ḥeq*, cf. Classical Arabic *ḥaqwun* 'loin' (with metathesis). For *meṯ*, cf. *mắwɛṯ* 'death'. For *ger*, cf. *yåḡur* 'he will dwell' and Gəʿəz *gor* 'neighbour'. For *leṣ*, cf. Mishnaic Hebrew *låluṣ* 'to scoff'. Finally, *lel* is only attested once in the absolute state, which is normally vocalized *láyil*. Given the context (Is 21:11), this is probably an artificial form, reflecting the reading of <mlyl> not as **milláyil* 'of the night', but as *millel* 'he spoke'. This reading is already attested in the Palestinian Talmud (*Taʿănīṯ* 1:1, cited in Macintosh 1980: 44).

It defies belief, then, that *yom* 'day', with 1112 attestations in the absolute state and 339 attestations in construct or before suffixes (76.6% absolute), or *šor* 'ox', with 59 attestations in the absolute state versus 19 in construct and before suffixes (75.6% absolute), should have analogically replaced their absolute state under influence from the unstressed allomorph, while *tǻwɛk̲* 'midst', with only 7 absolute states against 411 cases in construct or before suffixes (1.7% absolute), maintained the original form of the absolute state (Even-Shoshan 1989). We must examine, then, whether a phonetic conditioning can be found to have governed the outcome of *aw in stressed word-final syllables.

5.2.2 Data

Words with contracted *aw

Of the classical Semitic languages, only Classical Arabic and Syriac regularly maintain a consonantal *w* in *aw diphthongs. Since Biblical Hebrew *o* in stressed syllables can also be the outcome of *ā (corresponding to *ā* in Arabic and Syriac, see chapter 3) or *aWu (corresponding to *ā* in open syllables and *u* in closed syllables in Arabic, cf. *qāma* < *qawuma 'he stood', *qumtu* < *qawumtu 'I stood'; the Syriac reflex is hard to determine, but we may expect the triphthong to be contracted, as other triphthongs are), only cognate evidence from one of these languages can ascertain a reconstruction with an original diphthong *aw. The words with such a certain reconstruction are given in table 5.1.

The *ā* in Syriac *hāwnā* is unexpected, but does not detract from the presence of a consonantal *w*. Biblical Hebrew *lu*, *luz*, and *luăḥ* show the contraction of *law > *lu* noted by Steiner (1987). Classical Arabic *ṣawmun* and *sawṭun*, finally, may have been borrowed from Aramaic.

A number of words have been excluded from table 5.1, because there is not enough evidence to show that they should be reconstructed with a diphthong *aw. For words that can more plausibly be reconstructed with *ā, see chapter 3. Biblical Hebrew *dor* 'dwelling place' should be reconstructed as *dārum, *dawurum or *dayurum, based on the correspondence with Classical Arabic *dārun* with the same meaning. *dor* 'generation' could possibly be reconstructed as *dawrum based on Classical Arabic *dawrun*, meaning, among many other things, 'age, era', but Aramaic *dār* 'generation' makes *dārum a better reconstruction. *ḥoḇ* 'guilt' and *soṗ* 'end' are Aramaic loanwords (Wagner 1966: 52, 87). Finally, there is no conclusive

Table 5.1: Words with contracted *aw

BH	meaning	cognates
ʾo	‘or’	Syriac and Arabic *ʾaw*
hon	‘power’	Syriac *hāwnā* ‘skill’
zoḇ	‘genital discharge’	Syriac *dawbā*
yom	‘day’	Syriac *yawmā*, Arabic *yawmun*
lu	optative particle	Arabic *law*
luz	‘almond tree’	Arabic *lawzun*
luăḥ	‘tablet’	Arabic *lawḥun*
moṣ	‘chaff’	Arabic *mawṣun*
ʿopē	‘bird(s)’	Syriac *ʿawpā*
ṣom	‘fast’	Syriac *ṣawmā*, Arabic *ṣawmun*
šoṭ	‘whip’	Arabic *sawṭun*
šor	‘ox’	Syriac *tawrā*, Arabic *ṯawrun* ‘bull’

cognate evidence for *koăḥ* ‘might’, *loṭ* ‘covering’, *moṭ* ‘bar’, *noăḥ* ‘rest’, *nopē* ‘peak?’, *soḏ* ‘council’, *ʿoḏ* ‘still’, *ʿor* ‘skin’, and *tor* ‘turtle dove’.

Words with retained *aw

Only a handful of words and one suffix have retained *aw with a consonantal *w*. For ease of reference, they are listed in tabel 5.2. As a diphthong *aw in stressed, word-final syllables is the only source of Biblical Hebrew *ʾáw*(ɛ), we can be sure of the reconstruction of these words even without cognate evidence. The Ugaritic cognate of *ʾáwɛn* is given in order to disprove the frequent association of this word with *ʾon* ‘(virile) power’ (as in Koehler & Baumgartner 1994–2001), which is cognate with Ugaritic <an> ‘power’ and should thus be reconstructed as *ʾānum. *šåw* is spelled <šwʾ> and should be reconstructed as *sawʾum.

As is noted by Bauer & Leander (1922: 576), *réwaḥ* ‘space’ is a secondary, analogical creation. *ʿáwɛl* ‘injustice’ must be a late loan from a dialect or related language that preserved consonantal *w, presumably Aramaic, as the word’s *w* is maintained in all positions: cf. the construct state *ʿéwɛl* for regular **ʿol*, the suffixed form *ʿawlo* ‘his injustice’ for regular **ʿolo*, the feminine derived noun *ʿawlå* ‘injustice’ for regular **ʿolå*, and the conjugation of the associated verbal root as a *piʿel* with a ‘strong’ *w*, e.g. *yʿawwel* ‘he will act wrongfully’, whereas an inherited II-w root would have a *polel* like **yʿolel*.

Table 5.2: Words with retained *aw

BH	meaning	cognates
ʾa᷄wɛn	‘evil’	Ugaritic <un> ‘grief, misfortune’
ma᷄wɛṯ	‘death’	Syriac *mawtā*, Arabic *mawtun*
qaw, *qåw*	‘line’	–
šåw	‘falsehood’	–
ta᷄wɛḵ	‘midst’	–
-åw	3 m.sg. poss. pl. suffix	–

5.2.3 Analysis

The normal outcome of *aw in stressed, word-final syllables seems to be *o*. As there are only a few exceptions to this tendency, any conditioning we might establish runs the risk of being unfalsifiable: that a given rule is not contradicted by counterexamples may simply be due to the paucity of the material. Still, we may aim for phonetically plausible conditioning factors.

As is evidenced by *qaw*, *qåw* ‘line’, *šåw* ‘falsehood’, and the possessive suffix *-åw*, *-aw in word-final position was preserved: contraction only occurred if a consonant followed. This shows that the *ʾ in *šawʾ was lost before the contraction of *aw in this position took place. The optative particle *law > *lu* does not follow this rule, which gives us some indication about the process by which *aw developed into *u* when following *l: most probably, *l was velarized due to the following *w (properly a labiovelar approximant), and *a then assimilated to *u between the two velarized consonants. The subsequent contraction of *uw > *ū is regular and unremarkable. Another apparent exception is *ʾaw > ʾo ‘or’, but as this is a proclitic conjunction, *aw cannot be said to be truly word-final here.

Of the remaining three words with uncontracted *aw, *ma᷄wɛṯ* ‘death’ and *ta᷄wɛḵ* ‘midst’ both have an original voiceless plosive (which has become a fricative in Biblical Hebrew) following the diphthong. Both of these phonemes are unemphatic plosives, unlike the *ṭ* of contracted *šoṭ* ‘whip’. By the time the Septuagint was translated (third century BCE) at the very latest, the contrast between emphatic and unemphatic voiceless plosives had shifted from the original opposition between ejectives and plain stops to one between unaspirated and aspirated stops (Bergsträsser 1918: 38–42). As aspirated, voiceless plosives, *t and *k would have been

among the least sonorous sounds in the entire phonemic inventory of Hebrew (independently confirmed by DeCaen 2003 and Alvestad & Edzard 2009). The sonority principle dictates that the closer to the nucleus a segment is, the more sonorous it must be, resulting in a series of increasingly sonorous consonants in the syllable's onset, leading up to the nucleus, followed by a series of decreasingly sonorous consonants (as illustrated by, for example, English *crisp*). *t and *k would have produced the greatest contrast in sonority with the preceding *w, which means that syllables like *mawt and *tawk would have been easier to produce and perceive than those like *šawr, for instance. Thus, it seems plausible that *aw was only preserved before unemphatic (i.e. aspirated) voiceless plosives. This is contradicted by the contraction of *aw in *ʿōp̄* 'bird(s)' < *ʿawpum, but the contraction of *aw > *ō before a bilabial plosive is certainly a natural development. We may state, then, that *aw was preserved before unemphatic, non-bilabial, voiceless plosives.

ʾa̋wɛn 'evil', finally, is the only word where *aw occurs after *ʾ. *ʾ is known to attract a-vowels, and the preservation of *aw in this word may be due to that effect. Alternatively, we have seen in other cases that *ʾ is prone to being lost, although it was frequently restored in a precursor to Biblical Hebrew. If word-initial *ʾ was lost, this word would have become /awn/, phonologically. It seems plausible that the sequence *awC behaved differently than *CawC. As we have no real way to decide between these two alternatives, we may simply state that *aw was preserved after *ʾ.

Concerning the dating of the contractions, Blau (1995) shows that by the time of the codification of the Pentateuch, *aw had been contracted, while *ay had not yet been (even in those contexts where it is contracted in Biblical Hebrew), as indicated by the use of <w> and <y> as vowel letters. In the Pentateuchal orthography, <w> is sometimes used to spell /ō/ even when it comes from *ā, as in the feminine plural ending -*o̲t*, often spelled -<wt>, originally *-ātum. <y>, on the other hand, is not used for /ē/ which does not come from *ay, as in *ger* (spelled <gr>) 'sojourner' < *gawirum, cf. Classical Arabic *ǧārun* 'neighbour', Gəʿəz *gor* 'idem'. The dating of the composition and codification of the Pentateuch, however, is a very controversial issue.

Another source of evidence concerning the date of the monophthongization is Hebrew epigraphy. Taking only the evidence from Judahite Hebrew into account, we find the first indications of monophthongization around 700 BCE. The contraction of *aw is most clearly seen in the spelling <ym> for /yōm/ < *yawm, in

both construct and absolute state, first attested in the Siloam inscription (Zevit 1980: 20). The epigraphic evidence for the contraction of word-internal *ay is less clear; the first instance of contraction may be found in the spelling <bnkm> in an Arad ostracon, if it represents 'your (m.pl.) sons' /banēkémm/ < *banaykémma (p. 18). A less doubtful instance is found in another Arad ostracon, from the early sixth century, where <ʾlk> spells /ʾēlék(ā)/ 'to you (m.sg.)' < *ʾiláyka(h) (p. 27). While the dating of the composition of the Hebrew Bible is far beyond the scope of the present work, the evidence from the spelling of *ay would then seem to support an early codification of the orthography of the Pentateuch, predating the sixth century BCE, as the Pentateuchal spelling conventions match the epigraphy of that period.

5.2.4 Conclusion

We have seen that the original diphthongs *ay and *aw were contracted to *ē and *ō, respectively, in non-word-final syllables. Since construct states were unstressed, forming a single phonological word with their governing noun, syllables in a word in construct were always contracted. At some point after the Tiberian shift of *ā > *å*, the *e* resulting from *ē < *ay was assimilated to ɛ in stressed syllables preceding an *å*. In word-final syllables, *ay was preserved, with the epenthesis of *i* if another consonant followed, as in *báyt > *báyiṯ*. Cases of preserved *ay in word-internal syllables are analogical. *aw was also preserved in word-final position, i.e. if no consonants followed it; assimilation of the *a to the *w yielded Biblical Hebrew *åw*. In between two consonants, *aw in word-final syllables was only preserved before *t and *k, being contracted to *ō > *o* elsewhere. The preservation of *aw in *ʾåwɛn* may be due to the association between *ʾ and a-vowels, or due to the fact that the *a was word-initial when the contraction took place due to loss of the phonemic /ʾ/ in this position. Where *aw was preserved before another consonant, vowel epenthesis resulted in the Biblical Hebrew sequence *åwɛ*.

The first indications of monophthongization can be found in the epigraphic record. *aw > *ō is attested from the seventh century BCE onwards, while the first unambiguous case of *ay > *ē is found in an early sixth-century text. As the orthography of the Pentateuch seems to show that *ay was still retained in all positions when it was codified, this would make the sixth century BCE a *terminus ad quem* for the fixation of the Pentateuchal consonantal text, or at least that of its scribal conventions.

5.3 Triphthongs

5.3.1 Previous suggestions

In this section, we will deviate from a strict chronological order to give priority to the discussion of the development of triphthongs by Bergsträsser (1918: 99–101), which seems essentially correct. Elaborating on an idea first proposed by Barth (1894a: 200), Bergsträsser states that in a precursor of Hebrew, intervocalic *w and *y were elided when following a short vowel, with subsequent contraction of the two surrounding vowels. The quality of the first vowel was irrelevant to that of the resulting, contracted vowel. If the second vowel was *a, the triphthong resulted in *ā, as in *banaya > *banā > *bånå* 'he built', *t̲amōniyatu > *t̲amōnātu > *šmonå* 'eight (m.)', *ʿiyarīma > *ʿārīma > *ʿårim* 'cities', etc. If the second vowel was *i or *u, the resulting vowel was *ɛ̄, as in *qanayu > *qanɛ̄ > *qånɛ* 'reed', *bōniyu > *bōnɛ̄ > *bonɛ* 'building (m.sg.)', etc. This *ɛ̄ became *ē in certain unstressed positions, most importantly in the construct state, as in *śd̲e* < *śadē < *śadayu 'field (construct)', and in the imperative. In triphthongs in which the first vowel was short and the second long, the semivowel and the first, short vowel were both lost, while only the long vowel remained, as in *śadayōtu > *śadōtu > *śåd̲ot̲* 'fields'.

Considering triphthongs with a short second vowel, Bergsträsser only discusses those in word-final syllables (in Biblical Hebrew). Birkeland (1940: 42), however, rightly notes such word-internal examples as *mawita > *mēta > *me̲t̲* 'he died', which shows that the word internal outcome of triphthongs ending in *i was *ē; to this, we may add that word-internal triphthongs ending in *u contracted to *ō, as in *bawut̲a > *bōt̲a > *boš* 'he was ashamed'. With these additions, this explanation covers the data quite well; the few examples of apparently uncontracted triphthongs, e.g. *gd̲åyim* 'kids', are clearly the result of analogical restoration: *kalb 'dog' : *kalabīm 'dogs' = *gɛdy 'kid' : *gɛdayīm 'kids'. The only real exception to these rules known to me is that of *ʾarye* 'lion' < *ʾaryayum, cf. Gəʿəz *ʾarwe* 'wild beast'.[5] The *e* for expected ɛ may here be due to assimilation to the immediately preceding *y*. While these rules yield the correct output, however, one wonders whether they describe real-world phonetic changes. Especially the

[5]The etymologies of *ʾašre* 'happy is/are' and *ʾayye* 'where' are uncertain. Considering their proclitic nature, the retention of *e* in these words could be due to its word-internal position; in *ʾayye*, the preceding *y* could also be the conditioning factor.

change of word-final *-iyu, *-iyi, etc. > *ɛ̄ is phonetically baffling. We must still examine the phonetic formulation of these rules and their chronological relationship to other sound changes we have seen, then, but let us first consider the alternatives to Bergsträsser's account.

Brockelmann (1908: 57) postulates that triphthongs were already contracted in Proto-Semitic. The quality of the resulting vowel was that of the most sonorous vowel in the original triphthong: thus, for example, *awa, *awi, and *awu all contracted to *ā. Nouns and verbs with *w or *y as their third radical do not appear to have been affected by this change, as their semivowel is retained until the loss of word-final short vowels, at which point the resulting diphthong is treated according to Brockelmann's rules for all diphthongs, e.g. *qanayu > *qanay > *qanɛ̄ > *qånɛ* 'reed' (p. 192). This account is broadly shared by Bauer & Leander (1922), but it is convincingly dismantled by Birkeland (1940: 41–46). The latter notes that the contraction of triphthongs cannot have been Proto-Semitic. First, the triphthongs have different reflexes in different languages, as in *banayū 'they built' > Classical Arabic *banaw*, but Biblical Hebrew *bånu*. Second, the consonantal realization of the semivowel is still attested in languages such as Phoenician (Old Byblian forms like <bny> 'he built', see Gzella 2013b) and Ugaritic (e.g. <atwt> 'she came'). And third, *ā which resulted from the contraction of a triphthong never undergoes the Canaanite Shift in Hebrew (see chapter 3), which it should have if it were already *ā in Proto-Semitic.

Birkeland's own explanation is to be followed as far as stressed triphthongs are concerned, but for reasons that are not made explicit, he finds fault with Bergsträsser's explanation of the *-e* in imperatives and construct states as resulting from contraction as well. Instead, he prefers a Brockelmann-like explanation involving the earlier loss of case vowels in construct states: *mištayu > *mištay > *mištē > *mište* 'feast (construct)'. This causes problems in cases like *bōniyu > *bōniy > *bōnī > ***boni* 'building (construct)' for actually attested *bone*. Birkeland resolves these issues by positing a number of analogies like *mištɛ̄ 'feast (absolute)' : *mištē 'feast (construct)' = *bōnɛ̄ 'building (absolute)' : *bōnē 'building (construct)'. All this is unnecessary if we simply assume that construct states participated in the contraction of triphthongs. Any account which holds that they did not, while verbal forms did, must explain how and why construct states lost their final short vowels while verbs retained them. As no plausible explanation of that kind is available, we must reject Birkeland's account.

5.3.2 Phonetics and relative dating of triphthong contraction

Bergsträsser (1918) only discusses triphthong contraction in word-final syllables, and Birkeland (1940) does not consider the *-e* in the originally unstressed construct states to be the result of contraction. If we do consider word-internal and word-final, unstressed syllables, however, we find that *VWi contracts to ɛ in word-final position, as in *śadáyi > *śå̱d̲ɛ* 'field (absolute)' and to *e* in word-internal position, as in *mawíta > *me̱t̲* 'he died', *śadayi > *śd̲e* 'field (construct)'. The simplest explanation is that *Vwi > *ē in all positions, and word-final *-ē > *-ɛ̄ in a later change. That *ʾéllɛ* 'these' also ends in *sḡol* shows that unstressed *ē also participated in this change.[6]

The outcome of *VWa is clear: it always results in *ā, yielding Tiberian *å*, as in *qawáma > *qá̱ma > *qåm* 'he stood up'. In syllables that were already closed before the first apocope of unstressed short vowels, the resulting *ā was shortened to *a, as in *qawámta > *qá̱mta > *qámta > *qámtå* 'you (m.sg.) stood up'.

The contraction of *VWu had two different outcomes: word-internally, it yielded *ō, as in *bawúṯa > *bó̱ṯa > *boš* 'he was ashamed', but word-finally, we find ɛ, as in *yasqíyu > *yašqɛ* 'he will give to drink'. It looks like word-final *-VWu contracted to *-é̱, like *VWi; later, like *-é̱ < *-VWi, this vowel shifted to *-ɛ̱́. That word-final *VWu behaves like *VWi in the same position is puzzling, but it may be understood by positing a merger of word-final *-i and *-u, presumably into a central vowel like [ə]. This would be similar to a sound change that affected the Ethiosemitic languages, where *i and *u merged to ə, while *a remained distinct.[7] Phonologically, this [ə] may be interpreted as an allophone of *i, as triphthongs ending in [ə] behave like word-internal triphthongs ending in *-i-, contracting to *ē. We might state, then, that word-finally, *-u > *-i.

In imperatives of III-wy verbs, we find *e*, as in *ḥăze* 'see (m.sg.)'. Unlike the final vowel in the associated imperfect forms, this is not a reflex of a triphthong: rather, these imperatives should be reconstructed with *-i, as in *ḥzi, cf. Classical Arabic *irmi* 'throw' < *rmi and similar forms. The further development of *ḥzi > *ḥze

[6] The reconstruction of *ʾéllɛ is uncertain. Given the position of the stress and the quality of the final vowel, *ʾíllay seems to be the only reconstruction that would yield the attested Biblical Hebrew form, provided that unstressed *-ay contracted to *-ē at an earlier point in time in word-final position than word-internally (hence the spelling as <ʾlh> rather than **<ʾly>). This change must still postdate the stress shift in *mátay > *mataý, though; that *ʾíllay did not participate in this may be attributed to the difference in syllable structure.

[7] Contrary to the change posited for pre-Hebrew, though, Ethiosemitic *i and *u did not merge in truly word-final position, but only before consonants (Al-Jallad 2014).

> *ḥăze* is regular; as the word-final vowel was stressed in the monosyllabic *qal* masculine singular imperative, it was not deleted. The relation between ɛ and *e* in the imperfects like *tɛḥĕzɛ* 'you (m.sg.) will see' and the imperatives like *ḥăze* 'see' then led to the analogical creation of similar imperatives in other verbal stems: thus, *tṣawwɛ* 'you (m.sg.) will command' gave rise to *ṣawwe* 'command', although the inherited form *ṣaw* < *ᵗṣáwwi is also preserved.

We have seen, then, that *VWi > *ē in all positions, with later changes affecting some cases of this *ē. *aWi > *ē is phonetically unsurprising, and even the development of forms like *bōníyi > *bonɛ* 'building (m.sg. absolute)' is understandable, given the change of word-final stressed *-ī́ to -ɛ attested in *ḏ̲ī́ > *zɛ* 'this (m.)', but it really is hard to imagine how unstressed *iWi resulted in *ē, as in *bōniyi > *bone* 'building (m.sg. construct)', since unstressed *-ī did not regularly develop to **-e*, but stayed unchanged, as in *qū́mī > *qúmi* 'stand up (f.sg.)' or *ʾabī > *ʾăḇi* 'father (construct)'. Like Birkeland (1940), we could propose that *iWi > *ī, as expected, and posit a large number of analogies that then changed this *ī to *ē. The fact is, though, that *iWi *always* yields Biblical Hebrew *e* or ɛ, and never **i*. The simpler assumption is that *ē was the regular outcome of *iWi, resulting from sound change; but how can this be?

We saw in chapter 4 that Proto-Semitic *i and *u became *e and *o, respectively, in Canaanite. If we now suppose that this change preceded the contraction of triphthongs, we are no longer dealing with an incomprehensible change of *iWi > *ē, but with a perfectly natural change of *eWe > *ē. As all triphthongs like *VWe become *ē, all cases of *VWa become *ā, and word-internal *VWo become *ō, we may derive the simple rule that *$\breve{V}_1WV_2$ > *$\bar{V}_2$: contracted triphthongs resulted in a long vowel with the quality of the second vowel. This also applies to triphthongs with a short first vowel and a long second one, e.g. *śadayōt- > *śadōt- > *śå̄ḏo̲t̲* 'fields'.

One might object that this scenario is contradicted by the evidence from Amarna Canaanite, where we find that contraction has already taken place, as in *ša-de*$_4$*-e* < *śadayV 'field' (EA 287:56, noted by Birkeland 1940: 43), while Proto-Semitic *i is still spelled with i-signs, as in <sú-ki-ni> < *ᵗsōkini 'officer' (EA 256:9). This is unproblematic, however. First of all, as was emphasized elsewhere, Amarna Canaanite is not the ancestor of Biblical Hebrew, and the contraction of triphthongs in both languages may be independent developments. We do not have enough information about Amarna Canaanite to say whether *iWi > *ē there, too, or whether only *aWi shifted to *ē. Second, the spelling with i-signs need not reflect

the phonetic reality. Even if the Amarna Canaanite reflex of Proto-Semitic *i was pronounced [e], it would still be /i/ phonologically, as there was no other phoneme /i/ it contrasted with. That the Canaanite scribes used i-signs to spell /i/ is quite plausible. The result of contracted *ayV in *śadayV, however, was a separate phoneme /ē/, which contrasted with /ī/ < *ī. Here, then, the scribes would have had to use e-signs to avoid confusion.

So far, we have cited forms like *śadáye 'field' (nom./gen.), ignoring the presence of mimation on nominals in the absolute state. As is shown by its operation in verbs like *banáya > *baná́ > *bånå 'he built', however, the contraction of triphthongs must have preceded the first apocope of word-final short vowels. In chapter 4, it was found that tonic lengthening is most easily understood by positing two separate instances of word-final short vowel loss: the presence of mimation protected the case vowel of nominals from the first apocope, resulting in the difference between, for example, *naṯbára > *naṯbár (first apocope) > *nišbar* 'it broke', without tonic lengthening, versus *naṯbárum > *naṯbáru (loss of mimation) > *naṯbā́ru (tonic lengthening) > *naṯbā́r (second apocope) > *nišbår* 'broken (m.sg.)'. As the first apocope preceded the loss of mimation, and the contraction of triphthongs preceded the first apocope, the contraction of triphthongs must therefore have preceded the loss of mimation. The nominal developments we have been representing like *śadáye > *śadé́ should thus more accurately be stated as *śadáyem[8] > *śadém > *śadé́. To wrap up the discussion, let us give the loss of mimation some closer consideration.

Loss of mimation

The first question that we must consider is whether the loss of mimation in the singular[9] was due to sound change or rather a morphological development, presumably due to analogy or a similar mechanism. The other numbers still preserve the productive alternation between endings with and without mimation

[8]The merger of the nominative and the genitive in the construct state is due to the word-final change of *-u > *-i (or, perhaps, *-o > *-e) mentioned above, but one might think that the nominative and the genitive should still have been distinguished in the absolute state, as the *-u- was not word-final here. It seems likely, however, that the original nominative ending *-um participated in the same shift of unstressed *u > *i when adjacent to a bilabial that we have encountered in chapter 3, discussed in more detail in section 3.4. Thus, *śadáyum > *śadáyim (or *śadáyom > *śadáyem). That two of the three original case endings now contained *i explains why nominals ending in a triphthong always generalized *ē in their final syllable, as in *śåḏɛ*, and not the *ā of the accusative, as in ***śåḏå*.

[9]And the feminine plural, which is inflected like the singular in this regard.

into Biblical Hebrew: for the dual, cf. *yå̱ḏáyim* < *yadáyma (absolute) vs. *yḏe* *yaday (construct) 'hands', and similarly, the plural, like *dḇ̱årim* (absolute) < *dabaŕ́ima vs. *diḇ̱re* < *dabaray (construct with the original dual ending) 'words'. Only the singular has the same ending (namely, zero) in absolute and construct. As there is thus no source for an analogical loss of mimation, nor any motivation, it is more likely that the loss of mimation in the singular was originally due to sound change, not analogy.

The loss of word-final *-m is a common change, paralleled, for instance, in the development from Latin to the Romance languages. Simply positing *m > Ø / _# is too broad, however, as there are examples of preserved word-final *-m. In verbs, e.g. *yáqum > *yåqom* 'let him stand up', this can easily be due to its analogical restoration, but the same cannot be said for the masculine plural ending *-im* < *-ī́m (< *-ī́ma; since the first apocope preceded the loss of mimation, this morpheme would have lost its final vowel by this point).[10] As this plural ending always occurred in the same, word-final position, analogical restoration cannot have operated here.

Stress may have been the conditioning factor which caused some cases of *-m to be preserved and others to be lost. The plural suffix *-ī́ma is always stressed, but the syllable containing the mimation of singular forms would always have been unstressed, as its vowel was in the ultimate syllable, not the penultimate: *dabárum, not *dabarúm (see chapter 4 for the reconstruction of regular penultimate stress before the contraction of triphthongs). Thus, we arrive at a plausible sound law: word-final *-m following an unstressed vowel was lost between the first and the second apocope.

This leaves us with the problem of explaining why mimation was lost in *śadḗm > *śadém (shortening of the long vowel in a closed syllable) > *śå̱ḏ̱ɛ* and other nominals with a final triphthong, as *-m followed a stressed vowel here. Additionally, there is the small group of nouns that should probably be reconstructed as monosyllables, as their stem did not contain a vowel (see section 4.4 and Testen 1985): *bnum > *bnem 'son', *smum > *smem 'name', *mtum > *mtem 'man', *stum > *stem 'bottom', and *pwum[11] > *pūm > *pum? 'mouth'. Having

[10]Word-final *-m also seems to have been preserved in the second and third person masculine plural suffixes, but as the exact prehistory of these forms is unclear (see chapter 8), these will not be taken into consideration here.

[11]This is one a few nouns which lengthen their case vowel before suffixes and in the construct throughout the Semitic languages, cf. Biblical Hebrew *pi* < *pī 'mouth (construct)', *pí̱kå* < *pḯkā 'your (m.sg.) mouth', etc. In my opinion, this is due to the loss of an original last radical *w with

Table 5.3: Analogical loss of mimation in some words (all forms in genitive)

meaning	absolute	construct	suffixed
‘dog’	*kálb	*kalb	*kalb-
‘bitches’	*kalabṓt	*kalabōt	*kalabōt-
‘field’	*śadém >> *śadé́	*śadē	*śadē-
‘son’	*bném >> *b(e)n	*b(e)n	*bn-
‘mouth’	*púm? >> *pī́	*pī	*pī-

explained the loss of mimation in the rest of the lexicon as the result of sound change, it seems easiest to attribute the loss of mimation in these relatively few forms to analogy with the other singulars. Elsewhere in this work, proposed cases of paradigmatic levelling spreading from the construct state to the absolute have been met with suspicion, as the more autonomous absolute state should be more resistant to analogical change than the construct state. In these cases, however, the preservation of mimation would have led to a highly anomalous situation within the language, as many other singular and feminine plural nouns had the same, unmarked form of the noun in both states, as well as before pronominal suffixes (illustrated in table 5.3; at some point, *bn and similar words gained an epenthetic *e, which is shown in the table although this epenthesis is hard to date). This would make analogical loss of the no longer recognizable *-m more plausible.

5.3.3 Conclusion

The following rules govern the behaviour of triphthongs with a short first vowel:

1. *u > *i / _#. Thus, *yasqíyu ‘he will give to drink’ > *yasqíyi.

2. *i > *e, *u > *o. Thus, *yasqíyi > *yasqéye, *mawíta ‘he died’ > *mawéta, *bawúṯa ‘he was ashamed’ > *bawóṯa, *śadáyim ‘field (gen.)’ > *śadáyem.

compensatory lengthening of the following vowel, a regular Proto-Semitic sound law (Brockelmann 1908: 186): *pwika > *pīka ‘your (m.sg.) mouth (gen.)’. The original *w is still preserved in the Gəʿəz broken plural *ʾafaw* ‘mouths’ (from which the singular *ʾaf* was secondarily derived through back formation). Note that Aramaic *pum* has retained the mimation and generalized its presence throughout the paradigm, leading to forms like Biblical Aramaic *pum(m)ah* ‘her mouth’.

3. *$\breve{V}_1WV_2 > *\bar{V}_2$. Thus, *yasqéye > *yasqḗ, *mawéta > *mḗta, *bawóṯa > *bṓṯa, *śadáyem > *śadḗm, *qawáma ‘he stood up’ > *qāma, *qawámta ‘you (m.sg.) stood up’ > *qā́mta, *śadayṓtem ‘fields (gen.)’ > *śadṓtem.

4. *$\bar{V} > *\breve{V}$ / _C$. Thus, *qā́mta > *qámta.

5. Loss of word-final *m after unstressed vowels, followed by analogical loss of mimation in all singulars and feminine plurals. Thus, *śadṓtem > *śadṓte and *śadḗm >> *śadḗ.

6. Word-final *-ḗ > *-ɛ́. Thus, *yasqḗ > *yasqɛ́, *śadḗ > *śadɛ́, but *mḗt stays unchanged. As original *-ī́ also yields Biblical Hebrew -ɛ, this change may have been preceded by a change of word-final *-ī́ > *-ḗ, only affecting *ḏ̱ī́ > *ḏ̱ḗ > *zɛ* ‘this (m.)’ and *pī́ > *pḗ > *pɛ* ‘mouth’.

These changes occurred after the operation of the Canaanite Shift (see chapter 3). Changes (1)–(4) preceded the first apocope of unstressed short vowels. (5) certainly preceded the second apocope, and probably preceded tonic and pretonic lengthening, as the analogical loss of mimation in those nominals that had retained it would have been easier before the development of varying stem allomorphs due to those sound changes.

5.4 Summary

Although authors like Brockelmann (1908), Bauer & Leander (1922), and Blau (2010) see a connection between the sound changes affecting diphthongs and triphthongs, believing that some triphthongs lost their final vowel before contraction, the data are more easily explained by keeping the two developments – or actually three, as *ay and *aw behave differently – separated. The contraction of triphthongs must have been a relatively early change, as its effects are attested in the earliest Hebrew material, and the relative chronology shows that it preceded other early changes like the loss of mimation, while postdating the Canaanite Shift. The contraction of the various triphthongs starting with a short vowel can be expressed by the formula *$\breve{V}_1WV_2 > *\bar{V}_2$, a sound change that was preceded by the shift of *i > *e and *u > *o. A brief excursus on the loss of mimation led to the conclusion that word-final *m was lost after unstressed vowels at some point between the first and second apocope of word-final unstressed short vowels. The

contraction of diphthongs, unlike that of triphthongs, is a much later development, having taken place in the Monarchical period. *aw was contracted to *ō in all positions, except when preceding another *w (i.e. if the *w was geminated), in truly word-final position, or in word-final, stressed syllables preceding *t or *k (the non-bilabial unemphatic voiceless plosives, the least sonorous sounds in the Hebrew phonemic inventory) or following *ʾ. The first epigraphical attestations of this contraction in Hebrew are from the seventh century BCE. *ay, on the other hand, may have been preserved in all positions (possibly excepting word-final unstressed position) until the sixth century BCE, at the latest. It was then contracted to *ē in most positions, only being preserved before another *y and in word-final, stressed syllables.

6 Philippi's Law and other cases of stressed *i > *a

6.1 Introduction

In an 1878 article on the reconstruction of the Proto-Semitic numeral 'two', F.W. Philippi mentions, almost in passing, some cases where Biblical Hebrew has an *a* vowel for an original *i (reflected as *e* in Biblical Hebrew), like *baṯ* 'daughter' besides *ben* 'son', or *teláḏnå* 'they/you (f.pl.) will give birth' besides *teleḏ* 'she will give birth'. He concludes (p. 42) that the form of these words is the result of a sound law changing *i to *a in doubly closed, stressed, word-final syllables and in closed, stressed, penultimate syllables, which can be represented formulaically as *í > *á / _CC. This sound law would later come to bear Philippi's name.

While this seems like a very straightforward rule, things get more complicated once all the details are taken into account. On the one hand, there are many words that seem to have retained *i in the environment where Philippi's Law should have applied to them, e.g. *ṣel* 'shade, shadow' < *ṯillum, *léḵnå* 'go! (f.pl.)' < *likna. A more serious problem involves the dating of Philippi's Law. Philippi himself suggested that the sound change had already occurred in Proto-Semitic, citing a few possible examples from Gəʿəz. On the other hand, there are also indications that the sound change was a very late development that only affected some varieties of Hebrew, as it is not attested in the Hebrew in Greek transcription found in the second column of the Hexapla. Still, some scholars maintain that Philippi's Law must have been early, on the basis of the relative chronology with other sound changes which can be dated with more confidence. In this chapter, we shall examine the various formulations of Philippi's Law that have been proposed and try to account for the various apparent cases of *i > *a that can be found in Biblical Hebrew.

Since much has already been written on this subject, a complete treatment of all the relevant material would largely reproduce earlier work. For this reason, a detailed study will only be made of those categories where the conditions of the *i > *a change have not yet been adequately explained.

6.2 Previous suggestions

6.2.1 Philippi (1878)

In the process of reconstructing the Proto-Semitic word for 'two', Philippi (1878) faces various conflicting attested forms in the separate Semitic languages. In order to decide which of these are original and which are secondary, he often goes on an excursion, discussing the historical phonology of an individual language. It is in one of these excursions that he concisely introduces the sound change that is the subject of this chapter. Arguing that the *i* in Classical Arabic *ṯintāni* 'two (f.)' (< *ṯinatāni in his reconstruction) is original, he shows that the not infrequent Classical Arabic attenuation of pretonic *a > *i* (e.g. *tilmīḏun* 'student' < *talmīḏ, an Aramaic loanword) only occurred in originally closed syllables. The possible counterexample of Classical Arabic *bintun* 'daughter' – supposedly from *binatun – corresponding to Biblical Hebrew *baṯ* 'idem', is false in his opinion: the Hebrew form does not show that Classical Arabic *bintun* < *banatun, but on the contrary, *baṯ* comes from an earlier *bint. Here, then, we have an example of a shift from *i > *a, which "in a doubly closed, stressed syllable, and also in a closed, stressed syllable which is followed by another syllable, is not at all uncommon in Hebrew, also in context"[1] (p. 42). As other examples, Philippi gives *teláḏnå* 'they/you (f.pl.) will give birth' besides *yeleḏ* 'he will beget', *leḏå* 'birth' besides *lɛ́ḏɛṯ* and *laṯ* 'to give birth', both < *ladt, and similarly a supposed **tɛ́nɛṯ* (not actually attested) besides *teṯ* 'to give'; that stress is a conditioning factor is shown by the retention of *i in an unstressed syllable, as in *liḏti* 'my giving birth'. Parallel to a few Gəʿəz forms which Philippi sees as examples of the same sound change, he adds *kåḇeḏ* 'he was heavy' besides *kåḇáḏtå* 'you (m.sg.) are heavy', and *gḇir* 'lord', *gḇirå* 'lady', besides *gḇɛ́rɛṯ* 'lady', possibly < *gVbart < *gVbirt < *gVbīrt.

The main problem with Philippi's account is that of the absolute chronology, as was mentioned in the introduction: if Philippi's Gəʿəz examples are the result

[1] *... ist ja im Hebr. auch ausserhalb Pausa in doppelt geschlossener und betonter Sylbe oder auch in geschlossener betonter, auf die noch eine Sylbe folgt, gar nicht selten ...*

of the same development as the Hebrew ones, this must have taken place in Proto-West Semitic, yet Philippi's Law is not yet attested in the third-century CE Hexapla (Brønno 1943). Philippi's original statement of the sound change, then, may be too simplistic.

6.2.2 Barth (1887, 1889)

In two articles in a series of *Vergleichende Studien*, J. Barth restates Philippi's Law and broadens it, applying it to more cases of *i > *a in Hebrew, as well as some examples from Syriac. In Barth (1887), he notes that the alternation also appears in the *qal* feminine active participle, which reflects *i when followed by the *-å* suffix, as in *yoleḏå* 'giving birth (f.sg.)', but *a before *-t, as in *yolέḏɛ̱t* 'idem' from older *yōladt. Additionally, he includes a few dubious examples of originally monosyllabic nouns, the most convincing of which is *qέrɛ̱t* 'town' < *qart < *qirt < *qīrt besides *qir* 'wall'[2] < *qīr.

Barth (1889), which aims to explain the apparent disappearance of *yaqṭilu imperfects in Hebrew and Aramaic, cites only half of Philippi's Law, namely the part which was originally formulated as applying to closed, penultimate syllables: the author states "that *ĭ* in a stressed, closed syllable, which is followed by another one, changes to *a* in Hebrew, as PHILIPPI has rightly repeatedly emphasized"[3] (p. 185). This allows him to include a group of nouns which show an *i/*a alternation in the construct state, such as *zåqen* 'old (m.sg. absolute)' besides *zqan* 'idem (construct)'. The close connection with the following word then makes the affected syllable count as word-internal (pp. 185–186). Barth also posits a law of dissimilation which may be paraphrased as *CiC_1C_2iC > *CiC_1C_2aC (p. 190). This, then, explains the loss of *yiqṭil < *yaqṭilu imperfects, which were changed to *yiqṭal, except where the prefix had a different shape than *CiC_1C_2-, as in *yittin > *yitten* 'he will give'; in I-w roots (like *yēšib > *yešeḇ* 'he will sit'); in geminate roots (like *yaginn > *yåḡen* 'he will protect'); and in I-guttural roots (like *yaʾṭim > *yaʾṭem* 'he will shut'), including weak I-ʾ roots (like *yōkil > *yoḵel* 'he will eat').

That construct states like *zqan* were stressed, yet formed a phonological unit with the following word, is questionable, but not unthinkable. As Barth uses a similar formulation of the sound law to Philippi's original version, though, the

[2] For the semantics, cf. English *town* and German *Zaun* 'fence'.

[3] *... dass* ĭ *in betonter geschlossener Silbe, der noch eine weitere folgt, wie P h i l i p p i mit recht wiederholt hervorgehoben hat, im Hebräischen in* a *übergeht ...*

same chronological objections apply. His dissimilation rule seems tenable, but it is distinct from Philippi's Law and the cases it covers should not be adduced as examples of the latter.

6.2.3 Brockelmann (1908) and Bauer & Leander (1922)

Brockelmann (1908: 147–148) continues the trend of applying an ever-broader version of Philippi's Law to more and more words. In Brockelmann's formulation, the sound change consisted of a change of *i > *a in stressed syllables which were already closed in 'Proto-Hebrew' (*Urhebräisch*). Besides adducing additional examples of the categories already identified by Philippi and Barth, such as the place name *gaṯ*, attested in cuneiform documents as /gimtu/, he rightly concludes that Philippi's Law should have affected *qiṭlum nouns, leading to a merger with *qaṭlum in the unsuffixed singular, which then surfaces in Biblical Hebrew as *qɛ́ṭɛl*. The state of affairs which resulted from this sound change is maintained in words like *ṣɛ́ḏɛq* 'righteousness', reflecting *a, with preservation of the original *i before suffixes, as in *ṣiḏqi* 'my righteousness'; that the *i is original is supported by Classical Arabic *ṣidqun* 'truth(fulness)', Gəʿəz *ṣədq* 'righteousness'. Often, though, one form of the stem was generalized throughout the paradigm due to analogical leveling: thus words like *sépɛr/sipri* '(my) document' (for *i, cf. Akkadian /šipru/ 'idem') restored the *i in the unsuffixed state, while words like *rɛ́gɛl/ragli* '(my) foot' (for *i, cf. Classical Arabic *rijlun*) spread the new *a to suffixed forms as well. Like Barth, Brockelmann holds Philippi's Law to have affected some Aramaic dialects as well. Contrary to Barth (1889), though, Brockelmann sees the loss of *yaqṭilu imperfects as a mainly morphological development: while imperfects like *yarbiṭu (cf. Classical Arabic *yarbiẓu*) should have yielded Biblical Hebrew **yirbeṣ*, this form has been replaced by the original jussive *yirbaṣ* < *yarbiṭ, a form which, in Brockelmann's version of events, underwent Philippi's Law, changing its *i > *a.

Brockelmann's statement that Philippi's Law only affected originally closed syllables suggests that it took place before the first elision of short word-final vowels (see chapter 4), closing unaffected syllables in words like *zåqen* 'he was old' < *ḏaqina. We have already seen that such an early operation of Philippi's Law is hard to square with its non-occurrence in the Hexapla (Brønno 1943). In fact, some of Brockelmann's new examples furnish us with more evidence against an early operation of Philippi's Law, from the Septuagint. Compare Biblical Hebrew *gaṯ* 'Gath', *ṣɛ́ḏɛq* 'righteousness' (both mentioned above) and *mɛ́lɛḵ* 'king' < *malk

< *milk[4] to the Septuagint transcriptions γεθ and μελχισεδεκ[5], all with ε. That this ε does not simply render Hebrew /a/ is shown, for instance, by the transcription of the etymological *a of *šéḇaʿ* 'seven' < *šabʿ, cf. Classical Arabic *sabʿun*, spelled with an α in the place name βηρσαβεε 'Beersheba'. Thus, the transcriptions indicate that at least at the time of the Septuagint, these words were not yet pronounced as /gat/, /ṣadq/ and /malk/.

Brockelmann's explanation of the change of *yaqṭilu imperfects to *yiqṭal* is also problematic. While the *i in jussive forms like *yarbiṭ was indeed in a closed syllable, it was not stressed, as the pre-Hebrew stress was always penultimate (Cantineau 1931, see chapter 4); the word should therefore be reconstructed as *yárbiṭ. Thus, Brockelmann's account requires the stress shift in these words (also discussed in chapter 4) to precede Philippi's Law, an assumption he does not make explicit. A more serious problem is presented by the non-occurrence of the *i > *a shift in the context form of the *hip̄ʿil* jussive, *yaqṭel* < *yahaqṭil; Brockelmann's version of the sound change would also produce *yaqṭil > *yaqṭal > ***yiqṭal* in this form. In conclusion, the chronological problem remains unsolved, and Brockelmann's rationale for the disappearance of *yaqṭilu does not account for the facts.

Bauer & Leander (1922: 194–195) completely agree with Brockelmann, merely adding that monosyllabic construct states like *šεm-* 'name (construct)' < *šim were not affected.

6.2.4 Bergsträsser (1918)

Bergsträsser (1918: 149) formulates Philippi's Law in yet another way, stating that in closed syllables, *i became *a in two environments: "a) in a primarily stressed penultimate, and b) in a secondarily stressed ultimate syllable, namely in the construct state after the apocope of the case vowels"[6]. Besides the examples Brockelmann (1908) gives, Bergsträsser adds the second and third person feminine plural imperfect of the *nip̄ʿal*, *tiqqåṭálnå* (beside forms like third person singular masculine *yiqqåṭel*). Like Bauer & Leander (1922), Bergsträsser notes that *i is preserved in 'completely unstressed' construct states like *bin-/bεn-* 'son (construct)'

[4]Cf. Phoenician /milk/, e.g. in the personal name /milkyatōn/ '(the god) Milk has given', Friedrich & Röllig 1999: 43.

[5]I.e. the personal name Melchizedek, *malki-ṣéḏeq* in Biblical Hebrew.

[6]*... a) in haupttoniger vorletzter, und b) in nebentoniger letzter Silbe, nämlich im st. cstr. nach Abfall der Flexionsvokale (...).*

and *šɛm-* 'name (construct)'. As the same pattern can be found in Aramaic, Bergsträsser concludes that this must be a pre-Hebrew (i.e. Proto-Northwest-Semitic, in this case) development.

Bergsträsser treats the development of stressed *i before geminated consonants differently. Sometimes, it yields Biblical Hebrew ɛ, as in the second person feminine plural suffix *-k̲ɛn* (which he reconstructs as *-kinna), or *ʾĕmɛṯ* 'truth', *karmɛl* 'orchard' and *barzɛl* 'iron', which all have *-itt-* or *-ill-*, respectively, before suffixes; *ʿărå̄pɛl* 'gloom' and *båb̲ɛl* 'Babylon' might belong to this group as well. "Only occasionally" (*Nur vereinzelt*) does the development of *i > *a occur in this context, as in *baṯ* 'daughter' and the energic suffix *-anni*, apparently meant to derive from *-in-nī; but in most cases, *i yields Biblical Hebrew *e* in this environment, as in *leb̲* 'heart, mind' and other *qiṭṭum nouns, *hem* 'they (m.)' and related pronouns, and *teṯ* 'to give'. A separate case is formed by the *hip̄ʿil* of geminate roots, discussed in Bergsträsser (1929: 137). Citing many examples, the author states that the original distribution of the vowels between the first and second radical in these verbs seems to be *a* in the perfect and *e* in the imperfect, imperative and infinitive. This distribution is largely preserved, as in *heṣ̣ar* 'he distressed' besides *wayyåṣ̣éru* 'and they distressed', while a few verbs have generalized *a* or *e* throughout. Whether Bergsträsser sees this as a result of sound change or as a reflection of the Proto-Semitic situation (cf. Classical Arabic perfect *ʾafalla*, imperfect *yufillu*) is unclear.

There are no serious problems with Bergsträsser's version of Philippi's Law, but it leaves a lot unexplained. The development of *i before geminated consonants, in particular, remains unpredictable.

6.2.5 Sarauw (1939)

Unlike the authors listed above, Sarauw (1939) argues for a late date for the occurrence of Philippi's Law. In his work on stress and related topics in the classical Semitic languages, he points out (pp. 75ff.) that the various Greek transcriptions of Hebrew names and text all reflect /e/, spelled with ɛ, for *i which appears as *a* in Biblical Hebrew. Sarauw lists five environments in which Biblical Hebrew *a* from *e (usually < *i) occurs (p. 79): before geminated consonants, as in *máttå* 'you (m.sg.) died' besides *meṯ* 'he died'; before degeminated consonants, as in *gaṯ* 'Gath' (see above), including several words that have /a/ in the Babylonian vocalization, but not in the Tiberian, like *lab̲* 'heart' (Tiberian *leb̲*) < *libbum; before single

consonants in words in the construct state, as in *zqan* 'old (construct)' (see above); in verbal forms, such as *kå̱ba̱d* 'he was heavy' besides *kå̱be̱d* 'idem'; and in the third person masculine plural personal pronoun in the Babylonian vocalization, *ham* (Tiberian *hem*). Noting that these are the same environments in which tonic lengthening does not occur (see chapter 4), Sarauw concludes that there was a general sound change of all short *e > *a. Given the existence of some words with an *a* in context and *e* in pause, like *to̱ba̱d* 'you will be lost (context)' / *to̱be̱d* 'idem (pause)', this change must have postdated pausal lengthening. In many cases, this original distribution was distorted through analogical reshuffling, introducing *a* into pausal forms like *ba̱t* and *e* into context forms like *yitten*. In a few cases, this even led to a reversal of the original distribution, as in *yele̱k* 'he will go (context)' / *yela̱k* 'idem (pause)'.

Sarauw's arguments for a late occurrence of Philippi's Law are convincing, and the fact that the change of *i or *e > *a only occurs in those environments where the vowel does not undergo tonic lengthening is striking. His reliance on analogy to explain all the attested exceptions to his sound law is questionable, though, especially in the not infrequent cases of contextual *e* corresponding to pausal *a*.

6.2.6 Birkeland (1940)

Birkeland (1940: 28–32) takes a different approach to the problem of Philippi's 'Law', as he refers to it at one point. On page 32, he states: "Only a phonological treatment is thus capable of resolving these issues. From a purely mechanical–phonetic perspective, one must take so many exceptions into account that everything becomes uncertain."[7] Instead of trying to formulate a precise sound law that covers all cases of *i > *a, then, Birkeland sees *i*, *e*, ɛ and *a* as four different allophonic realizations of only two phonemes, /i/ and /a/. In some environments, the distinction between these phonemes has been lost; thus, in these environments, ɛ and *a* can be allophones of either /i/ or /a/. Which allophone actually surfaces – practically, when /i/ is realized as *a* – is largely determined by functional factors. That is to say that /i/ mainly preserves its realization as *e* in contexts where confusing it for /a/ could lead to incorrect identification of the word or grammatical form. In the feminine plural imperative of *yšb* 'to sit', **šé̱bnå*[8], for example, the

[7] *Erst eine phonologische Betrachtung ist so imstande, diese Probleme zu klären. Rein mechanisch-phonetisch muß man mit so vielen Ausnahmen rechnen, daß alles unsicher wird.*

[8] Not actually attested, but cf. *lé̱knå* 'go (f.pl.)' from *hlk*.

underlying /i/ in the first syllable must be realized as *e*, as it is characteristic of the I-y roots; if the word were realized as ***šáḇnå*, the hearer might think it were a form of another root, ***nšb*. Summarizing the relevant parts of the rules Birkeland gives for the realization of /i/, he concludes that the merger of /i/ and /a/ (i.e. the realization of /i/ as *a*, or the result of the change of *i > *a) is especially frequent before two consonants and also occurs in unstressed closed syllables (p. 32).

Birkeland's explanation is not very strong, as it fails to predict precisely when *i shows up as *a* in Biblical Hebrew. From a more theoretical point of view, he attempts to explain the apparent exceptions to Philippi's Law through what amounts to homonymy avoidance, the supposed tendency of languages to block certain sound changes if they would result in ambiguous forms (like ***šáḇnå* above); Birkeland explicitly does not see these exceptions as the result of analogical restoration or paradigm pressure (*Systemzwang*), as "one does not quite understand a system that works so unsystematically"[9] (p. 32). Homonymy avoidance, however, is a very dubious concept in and of itself (for a recent counterexample and compelling argument against its reality, see Sampson 2013). It cannot, therefore, be invoked to solve the present problem without raising new ones.

6.2.7 Brønno (1943)

Contrary to what the title might suggest, Einar Brønno's *Studien über hebräische Morphologie und Vokalismus* is not a general work on the historical grammar of Hebrew like some of the books mentioned above. Rather, it is an analysis of the reading tradition underlying the Hebrew Bible fragments in Greek transcription from the second column of Origines's Hexapla. Unlike earlier scholarship on the Secunda, Brønno exclusively bases his analysis on the Psalm fragments found by Giovanni Mercati (1895–1896), claiming that they are less corrupt than previously known Hexapla fragments.

Brønno does not discuss the detailed conditioning of Philippi's Law, quite simply because it does not occur in the Hebrew underlying the Secunda (pp. 302–305). Of the categories discussed above, the only words attested in Mercati's fragments are perfects of the *piʿel* and *hip̄ʿil*. Of these ten forms (p. 67), nine have an ε in the stressed syllable, like ελλελθ 'you profaned' (Tiberian *ḥillálta*), εσθερθα 'you hid' (Tiberian *histártå*). Only μαγαρθ 'you hurled' (Tiberian *miggártå*) is spelled with an α, but as the unexpected α in the first syllable indicates, this might simply be a

[9] *... man versteht nicht recht ein System, das so unsystematisch wirkt.*

Table 6.1: Spelling of first and second person perfects in the Secunda (Brønno 1943)

	*a (*qal* and *nip̄ʿal*)	*i (*piʿel* and *hip̄ʿil*)
α	11	1
ε	2	9

qal form (i.e. Tiberian ***måḡártå*) occurring instead of the *piʿel* of the Masoretic Text. As etymological *a is mainly reflected by α elsewhere in the Secunda, while *i, corresponding to Tiberian *e*, is transcribed with ε, it would seem that Philippi's Law had not yet been operative and these words still were pronounced with *e < *i, not the *a* of later Tiberian Biblical Hebrew.

As we shall see, some authors writing after Brønno try to discount the evidence from the Secunda for a late occurrence of Philippi's Law, which they hold to be an early development. They note that occasionally, the Secunda does spell ε for historical *a, as in νεγρεσθι 'I was cut off' (Tiberian *niḡrázti*). The spellings with ε where Tiberian Hebrew has a *páṯaḥ* resulting from Philippi's Law, then, could be the result of the same tendency to spell ε for *a*. The non-occurrence of *piʿel* and *hip̄ʿil* second and third person perfect forms with α could simply be coincidental.

Fortunately, there is a way to determine the odds of such a coincidence occurring. Comparing the candidates for Philippi's Law to their closest parallels with certain historical *a, the first and second person perfects of the (fientive) *qal* and *nip̄ʿal*, we get the data given in table 6.1. A statistical procedure known as Fisher's exact test (Fisher 1922) can then determine the probability of such a situation emerging by chance, i.e. the odds that the apparent difference between the two categories is not due to an actual difference in pronunciation.

Given the data in table 6.1, Fisher's exact test gives a p (probability) value of approximately 0.0006. In other words, there is only a chance of six in ten thousand that the words with pre-Philippi *i were pronounced with /a/ at the time the Secunda was written and that the difference in spelling with words with historical *a is purely due to chance. Obviously, this is highly improbable, and the probability only decreases if spellings of etymological *a in other contexts are also included. Claims that Philippi's Law had operated in the reading tradition underlying the Secunda but is coincidentally not reflected in the spelling are therefore untenable.

Considering the non-occurrence of Philippi's Law, it is interesting to note the relatively greater number of *qiṭl nouns, spelled with ε, which are attested in the Secunda as compared to the Masoretic Text. Many of these appear with a *sḡol* in Tiberian Hebrew, indicating a post-Secunda shift of *e > *a like in the first and second person perfects, e.g. δερχ 'way' with *e < *i vs. Tiberian *dέrεk̲* < *dark 'idem'. As these differences could also be the result of a morphological change of noun pattern, however, the evidence against pre-Secunda occurrence of Philippi's Law is not as strong as in the case of the verbal forms.

6.2.8 Blake (1950)

In an article discussing both Philippi's Law and the Law of Attenuation (see chapter 7), Frank R. Blake (1950) lists ten categories of words with *a* from historical *i. They include all the cases mentioned by Brockelmann (1908), as well as the 'pausal *páṯaḥ*' in pairs like *wayyiggåmel* 'and he was weaned (context)' / *wayyiggåmal* 'idem (pause)', which is also included by Sarauw (1939). He concludes that "[t]he so-called 'Philippi's Law,' the change of original *i* with either a primary or a secondary accent in a closed syllable to *a*, takes place regularly with certain regular exceptions" (p. 82), the exceptions being that *i changes to *e* in originally open syllables and before geminate consonants – except in a few words like *baṯ* 'daughter', where the geminate comes from an *-nC- consonant cluster – and that *i becomes ε before a geminate *n or word-final *n, *l, "and perhaps *m*" (ibid.), as in *karmεl* 'orchard'. As Philippi's Law has also left traces in Aramaic, but not in other Semitic languages, Blake considers it to be a Proto-Northwest-Semitic development (p. 83).

In Blake's version, Philippi's Law must have occurred at an early date, not only because it happened in Proto-Northwest-Semitic, but also because he attributes the occasional shift of *i > *a in words like *baṯ* to the fact that their geminate consonant goes back to a cluster with *n. This only makes sense if Philippi's Law took place before the assimilation of *n to following consonants, i.e. before the earliest records of written Hebrew. As we have seen, the data from the Secunda are hard to square with such an early occurrence of Philippi's Law.

6.2.9 Rabin (1960a)

Chaim Rabin's article on the development of vowels in unstressed syllables should not go unmentioned here, but as he does not go into great detail on the conditioning of Philippi's Law and treats it as one and the same phenomenon as the Law of Attenuation (chapter 7), it is discussed in section 7.2.4.

6.2.10 Blau (1981, 1985)

Two of Blau's many publications on the history of the Hebrew language are directly relevant to the question at hand. In the first (Blau 1981), he sets out to establish a relative chronology of Philippi's Law, interpreted as a shift of short *i > *a* in closed, stressed syllables (p. 5), and other sound changes, most importantly pausal lengthening. Noting that very many words with *páṯaḥ* from original *i do not lengthen it to *qǻmɛṣ* in pause, unlike words with original *a, he concludes that the operation of Philippi's Law postdated pausal lengthening. Another sound change, the pausal stress shift to closed final syllables (cf. *wayyǻrɔṣ* 'and he ran (context)' besides *wayyåroṣ* 'idem (pause)', both ultimately < *wa-yáruṭ), postdates pausal lengthening, but must precede Philippi's Law, too. In this way, the development of forms like *yiggā́mil (no pausal lengthening of *i) > *yiggāmíl (pausal stress shift) > *(way-)yiggāmál (Philippi's Law) 'and he was weaned (pause)' can be explained. Blau explains some apparent counterexamples and strange developments, including those in the segolates, with a plausible appeal to analogy.

In Blau (1985), the author discusses the absolute dating of Philippi's Law. He arrives at a fairly broad dating, more or less halfway between the early suggestions like those of Blake (1950) and the late chronology of Sarauw (1939). According to Blau, Philippi's Law must postdate the writing of the Amarna Letters, as forms with /i/ for *i are still attested there, and predate the Septuagint, based on the α in names like ασαρμωθ 'Hazarmaveth' (Tiberian *ḥăṣarmǻwɛṯ*), presumably *ḥaṣir mawt 'court of death', and σαλπααδ 'Zelophehad' (Tiberian *ṣlɔ̄p̄ḥåḏ*), presumably *ṣill paḥd 'shadow of fear' or similar. Thus, he arrives at an absolute dating of somewhere between 1300–300 BCE (pp. 2–3).

Blau (1981)'s reasoning is sound. Only finite verbal forms with *e* in context remain unexplained, as *i should have shifted to **a* here, too. As was discussed above, though, Blau (1985)'s dating is incompatible with the non-occurrence of

Philippi's Law in the Secunda. Blau attributes this to the variant spelling of /a/ in the Secunda, but as we have seen, this is extremely unlikely. The evidence from the Septuagint is uncompelling; both of the names Blau adduces are of uncertain etymology, and he ignores the ε in names like μελχισεδεκ.

6.2.11 Lambdin (1985)

Writing more than a century after Philippi (1878), Thomas Lambdin starts his Festschrift chapter on the law bearing the former's name with a summary of the consensus surrounding it, rightly concluding that "Philippi's Law falls woefully short of what one expects of a 'law' in historical phonology: on the one hand, the phonetic environment in which the law applies eludes precise definition; on the other, in many of the categories where the law is said to apply there are more counterexamples than examples" (p. 136). Seeking to remedy this, he first considers the alternation between *a and *i in the segolates. Lambdin notes both the great variation in the noun type of individual words between the Tiberian and Babylonian reading traditions, as well as the Secunda, and the seeming correlation between the phonetic mode of articulation of the consonant following the *a or *i: most words with a resonant (*m*, *n*, *l*, *r*) as their second radical have ε in the absolute state, like *mélɛ̱k̲* 'king', whereas most words *without* a resonant second radical have *i* before suffixes, like *qiḇro* 'his grave'. He concludes that *a and *i have been redistributed on phonetic grounds in the segolates, a fact that should not be attributed to Philippi's Law. Similarly, *qaṯṯ and *qiṯṯ nouns are excluded from the discussion: cases of interchange like *baṯ* 'daughter' besides *bitti* 'my daughter' "remain intractable" (p. 142). The other categories show no interchange in Tiberian Hebrew; their *a* reflex in the Babylonian tradition is easily explained by a shift of short *e (from earlier *i) > *a, unique to Babylonian Hebrew. In Tiberian, *i before geminates surfaces as ε in polysyllabic nouns (p. 142; p. 144 adds the condition that it must be followed by a *m*, *n*, *l*, or *t*), as in *karmɛl* 'orchard'. The loss of *yaqṭilu imperfects and the *i > *a shift in construct states like *zqan* 'old (construct)' are dismissed as morphological developments, leaving only the first and second person *qal* (*i statives), *piʿel* and *hip̄ʿil* perfects as the result of Philippi's Law, which is formulated as "**éC$_1$C$_2$(V)>áC$_1$C$_2$(V)*, i.e., **qittéltā>qittáltā*" (p. 143). Lambdin is not explicit about the dating of this development, but it must be late, as it only applies to Tiberian Hebrew.

Lambdin's explanation is plausible and works for the limited set of forms he seeks to elucidate. He also makes important points about the relationship between the Secunda and the Tiberian and Babylonian reading traditions, and the role Philippi's Law plays in each of them. Much is left unexplained, though; as Lambdin notes himself, it is ironic that *baṯ*, the very word that got Philippi started, is now excluded from his law, and the cases of interchange between *páṯaḥ* and *ṣere* in contextual and pausal forms of the verb are left unresolved as well. Additionally, his statistics are misleading: while it is true that most segolates with a resonant second radical have ɛ in the absolute state, the same goes for segolates *without* a resonant second radical. Similarly, the majority of segolates with suffixes has *i* in the first syllable, regardless of the following consonant, although the tendency is less pronounced before resonants. When this is taken into account, the correlation between segolate vowels and following (non-guttural) consonants is barely statistically significant and quite weak. The cases of *a/*i interchange in segolates, then, also still require an explanation.

6.2.12 Qimron (1986b, 1991), Ben-Ḥayyim (1989)

In a detailed article, Elisha Qimron (1986b), like Lambdin (1985), discusses data from the Babylonian reading tradition as well as the Tiberian one.[10] He concludes (p. 96) that there was a sound change of all short (*i >) *e > *a* in closed, stressed syllables. This development was inhibited before geminate consonants (as in *qiṭṭ nouns and verbal forms from geminate roots) and in doubly closed syllables (as in *qiṭl nouns). The original conditioning of this change has been obscured by analogy, *e being reintroduced from pausal forms, where it was lengthened and therefore preserved. The variation found between the different Hebrew reading traditions, in Qimron's view, might go back to original dialectal differences (p. 89).

An article by Ze'ev Ben-Ḥayyim (1989) in the same journal attacks Qimron's assertions, mainly his conclusion that Philippi's Law did not affect Samaritan Hebrew. Based on some forms with Samaritan *a* for Proto-Semitic *i, like *lab* 'heart' < *libbum, Ben-Ḥayyim argues that it did (pp. 117–119). Furthermore, he joins those scholars mentioned above who see Philippi's Law as an early,

[10] More recently, an English-language summary of the author's position and further elaboration, especially focusing on Babylonian Hebrew, has appeared as Qimron (2006). Although Qimron's conclusion that all instances of short *e shifted to *a* in Biblical Hebrew seems valid for the Babylonian reading tradition (as is also noted by Lambdin 1985), it does not hold for Tiberian Hebrew for the reasons discussed in the main body of the text.

perhaps Proto-Northwest-Semitic development. He dismisses the evidence from the Secunda as the result of a fortuitous absence of spellings with α. Instead, he sees evidence for an early occurrence of Philippi's Law in an alternative name for the Greek letter ϛ, σαν, which he sees as reflecting the "Phoenician–Hebrew" (**פיניקית־עברית**, p. 120) letter name *šan(n) (Hebrew letter name: *šin*, related to *šen* 'tooth' < *sinnum). A rebuttal by Qimron (1991) exposes the flaws in Ben-Ḥayyim's argument, maintaining that Samaritan Hebrew shows no consistent operation of Philippi's Law, and stressing that not only the Secunda, but all known Greek and Latin transcriptions show evidence against the prior occurrence of Philippi's Law and none in favour of it. To this, we may add that Ben-Ḥayyim's Phoenician *šan(n) would be the only attested example of Philippi's Law operating in that language, while there is a great number of counterexamples in the form of names containing the element /milk/ 'king, (the god) Milk' (Friedrich & Röllig 1999: 43).

Qimron (1986b)'s explanation is similar to that of Sarauw (1939). Unlike the latter, though, he finds a plausible solution for the occurrence of contextual *e* besides pausal *a*, as in *wayyiggåmel* 'and he was weaned (context)' / *wayyiggåmal* 'idem (pause)', by adopting Blau (1981)'s relative chronology (see above). The other verbal forms remain problematic. If *e* in context forms was always the result of analogical restoration, why does it always occur in I-wy roots like *yešeḇ* 'he will sit', but not in I-ʾ roots like *yomar* 'he will say'? More generally, why do we only see this analogical replacement of context forms by pausal forms where it helps to explain the exceptions to Philippi's Law, while verbs with historical *a never introduce the lengthened *å* from pausal forms into context forms? Like Sarauw (1939)'s formulation of Philippi's Law, Qimron's leaves too many data unexplained.

6.2.13 Revell (1989)

Revell (1989) takes a different approach to that of previous authors. Instead of positing a simple shift of *i > *a, he considers *i*, *e*, ɛ, *a* and *å* as different possible outcomes of *i in different phonetic and prosodic environments. He considers stress or lack thereof, the nature of the preceding consonant, and the syntactic (and therefore prosodic) environment in which a word is attested. Limiting ourselves to his discussion of *páṯaḥ* as a reflex of *i, the most important tendency is that this development is favoured by the presence of preceding voiced consonants or

plosives or following back consonants, i.e. velars and gutturals (p. 192). Stress (p. 189) and phrase-final position (p. 197) are also conducive factors, but to a lesser degree. Revell goes on to give a phonetic rationale for these conditioning factors (pp. 198–199).

While Revell's approach accounts for most of the data, he cannot give any hard and fast rules that actually predict the outcome of *i in a given context. There are only tendencies, which is hard to square with a Neogrammarian view of sound change. Establishing clear rules, with more predictive power, would therefore be preferable.

6.2.14 Dolgopolsky (1999)

On page 248 of his work describing the development from his version of Proto-Semitic to Biblical Hebrew, Dolgopolsky (1999) notes that three separate rules in his extensive relative chronology reflect three consecutive stages of the development normally known as Philippi's Law. In order, they are (using Dolgopolsky's own numbering for reference):

[28] (p. 192)

a) *i > *e in singly closed syllables with pausal, primary or secondary stress, doubly-closed word-final syllables with primary stress before a weak word boundary[11], and before geminates in syllables with pausal, primary or secondary stress. Examples: *bírku > *bérku 'knee' (p. 201), *wayyíḥy > *wayyéḥy 'and he lived' (p. 213), *ḥítːu > *ḥétːu 'arrow' (p. 208).

c) *ĩ (nasalized *i, from earlier *in) > *ɛ̃. Example: *bĩ́ttu > *bɛ̃́ttu 'daughter' (p. 207).

[39] a) (p. 193) *e > *ɛ before two different consonants (the first one not being *y) in word-final and word-internal syllables with pausal or primary stress and in word-final syllables with secondary stress before a weak word boundary[12]. Examples: *bérk > *bɛ́rk 'knee' (p. 201), *ś̗èlˁ- > *s̗èlˁ- (*sic*) 'rib' (construct) (p. 223).

[11] A weak word boundary is that following construct states of nouns and context forms of verbs. In this case, the latter are meant, as construct states bear secondary stress.

[12] I.e. in the construct state.

[40] (p. 194)

a) *ɛ with primary stress > *a before two consonants. Example: *mɛ́tnū > *mátnū 'we are dead' (p. 206).

b) *ɛ with secondary stress > *a before a single consonant and a weak word boundary[13]. The example Dolgopolsky gives (*pɛ̀ry- > *pàry- 'fruit (construct) (p. 209)) does not match the conditioning; rather, he must be thinking of something like *zaqɛ̀n- > *zaqàn- 'old (m.sg. construct)'.

c) *ɛ̃ > ã in monosyllables with pausal, primary and secondary stress. Example: *bɛ́̃t > *bā́t 'daughter' (p. 207).

Dolgopolsky is not explicit about the absolute dating of Philippi's Law, but based on the discussion of closely preceding and following sound changes (pp. 246–249), he seems to place the first step somewhere in Blau (1985)'s broad time frame of 1300–300 BCE.

The most innovative part of Dolgopolsky's account is the introduction of nasalized vowels to explain the unexpected behaviour of words like *baṯ* < *bintum 'daughter'. While there may be something to this, it does not cover all the cases of *i > *a before a geminate: *paṯ* 'morsel (of bread)' / *pitti* 'my morsel', for instance, must be derived from the root *ptt*, not **pnt*, as is attested by cognates such as Classical Arabic *fattata* 'to crumble'. The *a* in I-ʾ imperfects like *yomar* 'he will say' also remains unexplained. More generally, Dolgopolsky's rules are very complex – perhaps overly so – and often quite arbitrary.

6.2.15 Woodhouse (2004, 2007)

Like Philippi (1878) before him, Robert Woodhouse (2004) segues into a discussion of the Hebrew *i > *a change, in an article which examines the chronology of vowel lowering in Canaanite based on the different Greek forms of the place name 'Tyre'. He manages to combine a proposed early occurrence of Philippi's Law with its apparent non-occurrence in the Greek transcriptions by splitting it up into several separate stages, like Dolgopolsky (1999) does. By the time the Greek transcriptions were made, the vowel that would later become Tiberian Hebrew *a* < *i was pronounced as an open-mid vowel [ɛ], which was transcribed with the Greek letter ε (p. 243). In the slightly revised version of Woodhouse (2007), the relevant changes are then (using Woodhouse's numbering for reference):

[13] Again indicating the construct state.

3. *e (derived from earlier *i in step 1.) > *ɛ in stressed, closed syllables, but not before geminates, e.g. *zaqèn > *zaqɛ̀n 'old (m.sg. construct)', *gént > *gɛ́nt 'Gath'.

5. Assimilation of *n to a following consonant and word-final degemination, e.g. *gɛ́nt > *gɛ́t 'Gath'.

6. What Woodhouse (2004) suggests be called 'Blau's Law', after Blau (1981): stressed *ɛ > *a, including secondarily stressed *ɛ as in *wayyiggāmál < *wayyiggāmɛ́l < *wayyiggā́mɛl 'and he was weaned (pausal form)'.

Woodhouse's explanation is similar to that given by Dolgopolsky (1999), and it leaves the same data unexplained. Additionally, Woodhouse relies on morphological conditioning of sound change in two cases: first, word-final short vowels are only deleted in the construct state (hence *zaqénu > *zaqèn > *zaqɛ̀n 'old (m.sg. construct), but *kabéda > *kabéd 'he was heavy), then they are deleted without compensatory lengthening in verbs, but with compensatory lengthening in the absolute state of nouns (hence *kabéda > *kabéd 'he was heavy' vs. *kabédu > *kabéd 'heavy (m.sg.)'). Unlike Dolgopolsky, Woodhouse does not attempt to give a phonetic rationale for this, which weakens his line of reasoning considerably.

6.2.16 Summary

No satisfactory explanation for all instances of *i > *a in Biblical Hebrew has been put forward yet. In reviewing the literature on the subject, we have encountered some partial solutions, as well as some recurring questionable points. To sum up:

- As stated most clearly by Dolgopolsky (1999) and Woodhouse (2004), 'Philippi's Law' is most probably the telescoped effect of several distinct sound changes, rather than one single sound change.

- While the first step in this development may have been pre-Hebrew, as pointed out by Woodhouse (2004), the evidence from the Secunda (Brønno 1943) and other Greek and Latin transcriptions show that the final development, resulting in *a, must be quite late.

- The occurrence of *i > *a in the *qal*, *piʿel* and *hipʿil* perfect and feminine participle has adequately been explained by Lambdin (1985).

- The occurrence of *i > *a in the pausal forms of consecutive imperfect forms like *wayyiggåmal* 'and he was weaned' has adequately been explained by Blau (1981).
- The occurrence of *i > *a in segolates has already been adequately explained by Brockelmann (1908), although he probably dates it too early. While Lambdin (1985) leaves segolates out of consideration, the sound law formulated by him also covers them.
- With Lambdin (1985) and against Barth (1889) and Brockelmann (1908), the near-disappearance of *yaqṭilu imperfects need not be seen as a phonological development.
- No adequate explanation has yet been given for the development of *i before geminates and in the imperfect and imperative. The *i > *a shift in construct states, normally considered to be unstressed, also needs clarification.

6.3 Remaining issues

In the following section, we will identify possible cases of *i > *a in the remaining problematic categories. To ascertain the presence of *i in these words, cognate evidence is essential. This will mainly be drawn from Classical Arabic, Gəʿəz and Akkadian, as some scholars consider Aramaic to have undergone Philippi's Law as well. The former three languages reflect *a as *a* and /a/ in most cases; Akkadian sometimes shifts it to /e/, usually in the presence of historical pharyngeals. *i is reflected by *i* in Classical Arabic, ə (also < *u) in Gəʿəz, and /i/ in Akkadian.

The importance of external comparison, rather than internal reconstruction based on Biblical Hebrew alone, is illustrated by several examples of the *qaṭ* nominal pattern. Consider the homonymous word pair *sap̄* 'threshold' and *sap̄* 'bowl'. These two words are identical in all forms: *sap̄* is the context form of the absolute state, *såp̄* is the corresponding pausal form, and the unstressed form of the stem is *sipp-*, as in the plural *sippim*. Scholars who merely rely on an interchange between *a* and *i* to identify *i, like Qimron (1986b), would reconstruct both words as *ᵗsippum or similar. Comparative evidence, however, yields a different result. Akkadian cognates (or possibly source words, if the Hebrew terms are loanwords from Akkadian) are attested for both words: for *sap̄* 'threshold', there is Akkadian /sippu/ 'idem', while *sap̄* 'bowl' is paralleled by Akkadian /sappu/ or /šappu/

'idem'. It would seem, then, that these are originally distinct words, one with *i, the other with *a. The merger of these vowels in stressed syllables may be due to Philippi's Law, while their merger in *i* in unstressed syllables would seem to be the due to later analogy (see chapter 7).

A similar case is that of *mas* 'forced labour'. As the *pa̱ṭaḥ* is retained in the identical pausal form, and the plural is *missim*, some scholars would reconstruct this word as *mi^{t}s^{t}sum, with *i > *a* due to Philippi's Law. Yet the word is attested as /massu/, with an *a, in Amarna Canaanite (EA 365:14, 23, 25). As we have seen, the shift from *i > *a cannot have taken place this early, and this word must therefore have historical *a. The *i* in the plural and the pausal *pa̱ṭaḥ*, then, may be due to analogy with other words where these vowels originated through regular sound change. These words illustrate that only external evidence can ascertain the presence of historical *i in any word.

6.3.1 The construct state

As we have seen, the *a* < *i in construct states like *ḥăṣar* 'court (construct)' has been part of the discussion surrounding Philippi's Law since Barth (1889). These forms have generally been explained in two ways. First, those authors who hold that *all* instances of stressed short *i shifted *a, point out that the *i in the construct state was short, like the parallel *a in *dḇar* 'word (construct)' besides its long form in the absolute state *dåḇår*. An unconditioned shift of stressed short *i > *a is too simplistic, though, as it leaves many cases of *i > *e* unexplained. The same goes for accounts which simply hold that Philippi's Law operates in all closed syllables. Second, it has been pointed out that construct states form a phonological unit with the following noun, which always starts with a consonant, so that the *i in the final syllable of the construct state was followed by two consonants, the environment in which Philippi's Law operated. Still, though, the *i must have been stressed for it to have shifted to *a, and construct states are generally held to have been unstressed. This has led many authors to introduce various levels of stress: the *i in these construct states would then only have born secondary, sometimes even tertiary stress. While this is possible, it does not really match any other linguistic facts from the development of Hebrew, and an explanation that can do without this ad hoc introduction of different levels of word stress is to be preferred. Additionally, the non-operation of Philippi's Law in forms like *bɛn-* 'son (construct)' requires further explanation.

In fact, the development of *i > *a in these construct states is the completely predictable result of a set of sound changes that are already known from other cases. In chronological order, they are:

1. Construct states are unstressed and form a prosodic unit with the following noun. This is already known from words like *dḇar* 'word (construct)' < *dabar-. Thus, *ḥaṣír[14] 'court (construct)' > *ḥaṣir-.

2. Unstressed short *i (> *e) > *ɛ. This is also seen in forms like *wayyélɛḵ* 'and he went' < *wayyḗlik, *bɛn-* 'son (construct)' < *bin-. Only vowels in word-final syllables are affected. Thus, *ḥaṣir- > *ḥaṣɛr-.

3. At some point in the Masoretic reading tradition, many construct states receive stress on the same syllable as their absolute state (Blau 2010: 265). This is reflected by the placement of an accent on the affected syllable. Words with a following *maqqep̄*, indicating that the word was still pronounced as one phonetic unit with the following word, did not receive such an accent. Thus, *ḥaṣɛr- > *ḥaṣɛ́r.

4. What Woodhouse (2004) calls Blau's Law, based on Blau (1981): stressed *ɛ > *a, as in *wayyēlɛ́k 'and he went (pause)' > *wayyelaḵ*. Thus, *ḥaṣɛ́r > *ḥăṣar*.

This account has the great advantage that it requires no new sound changes to explain the development of this reasonably small class of nominal forms. Additionally, it explains almost all of the exceptions, where *i before a word-final consonant in the construct state yields ɛ, not **a*. These words, like *bɛn-* 'son (construct)', are almost always followed by a *maqqep̄*; in the case of *bɛn-*, there are a handful of attestations without a *maqqep̄* against more than a thousand with one. The construct states with *i > *a*, however, are almost always attested without a *maqqep̄*, and consequently with a Masoretic accent on the affected syllable.[15] Forms like *ʿiqqɛš-* 'crooked (m.sg. construct)' show that the development is not related to word length.

Table 6.2 lists the attested construct states with *i > *a* and *i > ɛ. Cases of *i before gutturals have been excluded, as they should change to *a* in any case.

[14] Or, more likely, some earlier protoform.

[15] The exceptions are *kḇaḏ-* < *kabid 'heavy (m.sg. construct)' in Ex 4:10, preceding another instance of *kḇaḏ* without *maqqep̄*, *mirbaṣ-* < *marbiṣ 'resting place (construct)' in Ezek 25:5, immediately followed by another *ṣ*, and *qan-* < *qinn 'nest (construct)' in Deut 22:6.

Table 6.2: Construct states with *i > *a* or ɛ

construct	absolute	meaning
*i > *a*		
ʾoḇaḏ	*ʾoḇeḏ*	‘lost (m.sg.)’
zqan	*zåqen*	‘old (m.sg.)’
ḥăḏal	*ḥåḏel*	‘ceasing (m.sg.)’
ḥăṣar	*ḥåṣer*	‘court’
yṯaḏ	*yåṯeḏ*	‘tent peg’
kḇaḏ(-)	*kåḇeḏ*	‘heavy (m.sg.)’
mispaḏ	*mispeḏ*	‘wailing’
maʿ(*ă*)*śar*	*maʿăśer*	‘tithe’
mirbaṣ-	*marbeṣ*	‘resting place’
ʿăral	*ʿårel*	‘uncircumcised (m.sg.)’
qan-	*qen*	‘nest’
*i > ɛ		
bɛn-	*ben*	‘son’
lɛḇ-	*leḇ*	‘heart’
lḇɛn-	**låḇen*?	‘white (m.sg.)’
ʿiqqɛš-	*ʿiqqeš*	‘crooked (m.sg.)’
ʿɛṯ-	*ʿeṯ*	‘time’
šɛm-	*šem*	‘name’
šɛn-	*šen*	‘tooth’

6.3.2 The imperative and imperfect

A minor problem, mentioned by Birkeland (1940), is the retention of *i in the imperative *lé̱knå* 'go! (f.pl.)' versus its shift to *a in *telá̱knå* 'you/they (f.pl) will go'. Birkeland sees the non-occurrence of Philippi's Law in this form as evidence that it was blocked where it might create grammatical ambiguity. There is no need to resort to this non-phonetic conditioning of a sound change. In the first place, this form could easily be the result of analogy with the masculine singular imperative. With reference to the strong verb, the analogy may be expressed formulaically as *qṭol* (imperative m.sg.) : *qṭólnå* (imperative f.pl.) = *le̱k* (imperative m.sg.) : *lé̱knå* (imperative f.pl.).

But even this appeal to analogy is unnecessary. Due to the different position of the syllables in the word, the non-occurrence of Philippi's Law in *lé̱knå* 'go! (f.pl.)' can be explained by stating that Philippi's Law, or at least one of its stages, did not affect word-initial syllables in polysyllabic words; formulated positively, this sound change only affected word-final and word-internal syllables. This phonetic account is supported by another case, where the retention of *i cannot be due to analogy: the alternation between the vowels of *qɛ́ḏɛm* < *qadm 'east' and *qéḏmå* < *qidmah 'eastwards' can be explained by positing historical *i for both forms of the word, which was changed to *a (and later to ɛ) in the monosyllable *qɛ́ḏɛm*, but not in word-initial position in the polysyllable *qéḏmå*.

An apparent counterexample to this rule is found in *má̱tnu* 'we died' and other first and second person forms, occurring besides *e* in *me̱t* 'he died'. Here, Philippi's Law seems to have operated in the first syllable of a polysyllabic word. This is not the only exceptional feature of this paradigm, however. In the first person and second person masculine singular, *mátti* and *máttå*, respectively, we see the apparent operation of Philippi's Law before original geminates, which is not otherwise attested (see the relevant section below). It seems justified to attribute the vocalization of these rare first and second person forms of 'to die' to analogy. If this was a late change, after the lengthening of all accented vowels, the analogy may be formalized as *kåḇe̱ḏ* 'he is heavy' : *kåḇá̱ḏtå* 'you (m.sg.) are heavy' = *me̱t* 'he died' : *máttå* 'you (m.sg.) died'. If the analogy preceded this lengthening, the different quantity of the e-vowels in *kāḇe̱ḏ and *mē̱t would have been problematic, but the analogy could have been based on the pausal forms, *kāḇē̱ḏ (with pausal lengthening, see chapter 4) and *mē̱t (identical to the contextual form).

The consideration that Philippi's Law did not operate in the initial syllable of polysyllabic words allows us to date its operation to a certain degree. As it affected *qɛ́d̲ɛm* 'east', this and similar words cannot have been polysyllabic at the time of its operation. Hence, Philippi's Law must have postdated the second apocope of word-final short vowels; see chapter 4, where it is also argued that the unconditioned shift of *i and *u > *e and *o, respectively, had already taken place by this time. Consequently, the first stage of Philippi's Law is most easily seen as a phonetic change of *e > *ɛ before two different consonants in word-final and word-internal syllables; these accentuated cases of *ɛ then shifted to *a* due to Blau's Law. Words like *qɛ́d̲ɛm* would then have developed as follows: *qídmum > *qédmem > *qédme > *qédm > *qɛ́dm (first stage of Philippi's Law) > *qádm (the second stage of Philippi's Law, i.e. Blau's Law) > *qɛ́d̲ɛm*.

Regarding the imperfect, most cases of *e/a* interchange occur in consecutive imperfect forms, which have already been explained by Blau (1981). A similar case is that of *wyelak̲* 'and he must go (pause)' in Job 27:21, versus the context form, *yelek̲*. Like *(ʾal-)tålan* '(do not) spend the night (m.sg., pause)' in Judg 19:20, *(ʾal-)tosap̄* '(do not) continue (m.sg., pause)' in Job 40:32, and similar forms, this is probably a jussive, which can be explained in the same way as the consecutive imperfect pausal forms.

Something else altogether seems to be the case with the imperfects of three I-ʾ verbs. While the other imperfects with *e/a* interchange have *e* in the context form and *a* in pause, the opposite is found in *yok̲al* 'he will eat (context)' / *yok̲el* 'idem (pause)', *tomar* 'she will say (context)' / *tomer* 'idem (pause)', *tob̲ad̲* 'you (m.sg.) will be lost (context)' / *tob̲ed̲* 'idem (pause)', and similar forms from the same verbs. It is striking that this 'reversed' state of affairs is only found in these verbs, already an irregular category with *o* < *aʾ as the prefix vowel. Bauer & Leander (1922: 369) note that *ʾkl* 'to eat' has *u* in the imperfect stem in Classical Arabic, e.g. *yaʾkulu* 'he will eat'. They reconstruct the same form for the Hebrew cognate of this verb and attribute its unusual vocalization to a dissimilation of *u > *a* and *e* after the preceding *o*: *yaʾkulu > *yākulu > *yōkulu (Canaanite Shift, see chapter 3) > *yok̲el* and *yok̲al*. That the vowel in the second syllable is dissimilated from that of the first syllable is confirmed by the imperatives *ʾĕk̲ol* 'eat (m.sg.)' and *ʾĕmor* 'say (m.sg.)', where the original vowel quality has been preserved.

The development of the pausal form, *yōkol > *yōk̲ōl (pausal lengthening) > *yōk̲ēl > *yok̲el*, is parallelled by *lūlō > *lūlē > *lule* 'unless', originally 'if (*lu*) not (*lo*)'. Similarly, we might expect the contextual form to have developed from

Table 6.3: Unambiguous *qiṯṯum and *qinṭum nominals

BH	meaning	cognates
ʾeṯ	'ploughshare'	Akk. /ittû/
baṯ	'daughter'	Arab. *bintun*
gaṯ	'winepress, Gath'	EA /gimti/
ʿer	'border'	Akk. /zirru/ 'reed fence'
sap̄	'threshold'	Akk. /sippu/
šen	'tooth'	Arab. *sinnun*, Ge. *sənn*, Akk. /šinnu/
šeš	'six'	Arab. *sittun*, Akk. /šeššu/ etc. (see text)
tel	'mound'	loanword from Akk. /tillu/

*yōḵol > *yōḵel > **yōḵel*. Instead, we find *yoḵal*, which is unexpected, but not incomprehensible. Apparently, the length of the second vowel determined the type of dissimilation: fronting dissimilation in the case of a long vowel (*ō > *ē), height dissimilation in the case of a short vowel (*o > *a); a dissimilatory loss of rounding occurred regardless of the vowel's length. Unfortunately, there are no other known cases of sequences like *CōCoC in Biblical Hebrew, so this ad hoc dissimilation rule cannot be checked against other examples. As far as the other I-ʾ verbs go, at least, those that can be reconstructed as *yaqṭulu imperfects follow the same rules, cf. *yomar* < *yaʾmuru (Classical Arabic *yaʾmuru* 'he will command') and *yoḇaḏ* < *yaʾbudu (Classical Arabic *yaʾbudu*[16] 'it will go missing').

6.3.3 *i before geminates

Nouns

Table 6.3 shows the *qiṯṯum nouns (including those with an assimilated *n as their second radical) that can be reconstructed with *i based on external evidence. Of these, only three show *a* for *i.

Several words were excluded from the table, as the cognate evidence does not unambiguously support *i. *ʾem* 'mother' probably goes back to *ʾummum, cf. Ugaritic <um>, Classical Arabic *ummun*, and Akkadian /ummu/.[17] Koehler &

[16] And *yaʾbidu*.

[17] According to the dissimilation rule discussed in chapter 3, unstressed *u dissimilated to *i next to bilabial consonants. If the *i in *ʾem* is due to dissimilation, this could have originated in suffixed forms like *ʾummahu > *ʾimmahu > *ʾimmo* 'his mother' and spread to the absolute state through

Baumgartner (1994–2001) list Akkadian /ikku/ as a cognate of *ḥeḵ* 'palate', but according to the CAD, the word means 'irritation' and "[t]here is no indication that *ikku* refers to a part of the human body" (volume 7, p. 59). The vowel of *leḇ* 'heart' could go back to *i, like Akkadian /libbu/, or *u, like Classical Arabic *lubbun*, in which case the vowel has been dissimilated from *u > *i in Hebrew. Other words that were excluded either had no attested cognates except for those in Aramaic, or no attested cognates at all. Hence, they might go back to either *qiṭ̣ṭum or *qaṭ̣ṭum.

The correspondence of Hebrew *š* to Arabic *t* in the word for 'six' (see table 6.3) is irregular. This is due to the presence of an unusual consonant cluster in the Proto-Semitic form of this word, *sidṯum (Brockelmann 1908: 486). In Classical Arabic, *sidṯum developed to *sittun* with mutual assimilation, while the Aramaic (*šeṯ*) and Ugaritic (<tt> /tittu/ < *sittu) forms show that in Proto-Northwest-Semitic, the *d fully assimilated to the following *ṯ: *sidṯum > *sittum.

Of the three unambiguous cases of *i > *a* before geminates in monosyllabic nouns, two are known to have developed their geminate from an earlier cluster of *n and another consonant. As the only attested cognates of *sap̄* are from Aramaic and Akkadian, languages that also exhibit n-assimilation, the word could go back to either *sippum or *sinpum. Bearing in mind that the first step of the multiple developments that are collectively known as Philippi's Law could have occurred quite early, then, the simplest explanation that covers the data may be that this first step (probably *e > *ɛ, see the previous section) took place before n-assimilation: thus, we may be dealing with a change like *bent > *bɛnt > *bɛtt in all three cases.

In polysyllabic nouns, *i before geminate consonants does not yield *a*, except for a few possible cases in proper nouns of uncertain etymology. Instead, it appears as *sḡol* in *barzɛl* < *bar^{d}zillum?[18] 'iron', cf. Akkadian /parzillu/ and similar forms in other languages. The original *i and the gemination are preserved in the Biblical Hebrew personal name *barzillay*. Similarly, the Biblical Hebrew name for the city of Babylon, *bå*b̲*ɛl*, also has *i > ɛ. This reflex of *i shows that the following *l* was originally geminated. Hence, the Biblical Hebrew form of the name must come from the oldest attested form, /babilla/, not the later, Akkadian folk-etymological

analogy; a kinship term like 'mother' is likely to have occurred in suffixed and construct forms quite frequently, as a mother is always *someone's* mother. The same goes for *leḇ*, mentioned below, if this is to be reconstructed as *lubbum.

[18] A loanword of uncertain origin. Reconstructing a complete nominal ending, including mimation, may be anachronistic for this word.

form, /bāb-ili/ 'gate of God' (Edzard 2004: 121). Although there is no external evidence for *i in *ʾĕmɛṯ* 'truth', *karmɛl* 'orchard', *ʿăråp̄ɛl* 'gloom', and *garzɛn* 'axe', the ɛ in these words may well go back to *i before a geminate, preserved before suffixes in *ʾămitto* 'his truth' and *karmillo* 'his orchard'. *måḡen* 'shield' and *mesaḇ* 'surroundings' both have *i before a geminate in suffixed forms (*måḡinnim* 'shields' with unexplained *å*, *msibbo* 'around him'), but without cognate evidence, they are of doubtful use.

As *ʾĕmɛṯ* 'truth' is from the root *ʾmn*, its second syllable may go back to *-intum. In that case, it might be expected to have shifted to **-*aṯ*, like *baṯ* 'daughter' < *bintum. There are several possible explanations for this non-participation of *ʾĕmɛṯ* in Philippi's Law. First of all, contrary to what was concluded above, the first step of Philippi's Law might have take place after the assimilation of *nC clusters after all, and have only affected geminates in monosyllabic nouns – hence, *bett 'daughter' would have been affected, but *ʾamett 'truth' would not have been. In that case, all the monosyllabic *qiṭṭum nouns that retained their *e, like *šen* 'tooth', would have to be explained as analogical restorations. A more economical approach would be to maintain that the first stage of Philippi's Law operated before *nC cluster assimilation and did not affect *e before geminates, thus affecting *ʾament 'truth', but not *šenn 'tooth'; *e must then be assumed to have been analogically restored in *ʾĕmɛṯ* 'truth' alone, and not in all the unaffected monosyllables. The restoration would have been based on the form of the stem that was used in construct and before suffixes, which also explains the otherwise irregular non-lengthening of pretonic *a (see chapter 4). Alternatively, Woodhouse (2004) suggests a sporadic dissimilation of *ʾamint- > *ʾamitt-, caused by the preceding nasal. As dissimilation is known to operate sporadically (Yu 2006: 527), this is also a possibility.

Verbs

In the verbal system, stressed *i before geminates is mainly found in the *hip̄ʿil* of geminate roots. Here, *i is usually reflected by *e*, as in *heseḇ* 'he turned', but occasionally, it yields *a*, as in *hesábbu* 'they turned'. The cases in which this apparent instance of Philippi's Law occurs are listed in table 6.4.

Considering these data, two facts are especially striking. First of all, the *i > *a* shift almost exclusively occurs in the perfect. The occasional instances in other tenses are almost all before ʿ, which is known to change preceding short *i to *a*

Table 6.4: Geminate *hip̄ʿil* forms with *a*

BH	meaning	tense
håb̲ar	‘to cleanse (pause)’	inf.
heḏ̲aq	‘he pulverized’	pf.
hemássu	‘they melted’	pf.
hemar	‘he embittered’	pf.
hesábbu	‘they turned’	pf.
hep̄ar	‘he broke (pause)’	pf.
meṣ̲al	‘spreading shadow (m.sg.)’	ptc.
heṣ̲ar	‘it distressed’	pf.
yåṣ̲ar-	‘it will distress’	ipf.
wayyåṣ̲ar	‘and it distressed’	ipf.cs.
heqal	‘he lightened’	pf.
heqállu	‘they lightened’	pf.
herak̲	‘he made timid’	pf.
heraʿ	‘he acted badly’	pf.
ʾåraʿ	‘I will act badly’	ipf.
nåraʿ	‘we will act badly’	ipf.
håraʿ	‘to act badly’	inf.
meraʿ	‘acting badly (m.sg.)’	ptc.
hešámmu	‘they desolated’	pf.
het̲az	‘he struck away’	pf.

(Bauer & Leander 1922: 206), and *r*, which might have a similar effect. Secondly, these verbs seem to behave differently from the nouns considered above: while stressed *i before a geminate in polysyllables is reflected by ɛ there, it appears as *a* in these verbal forms, like in monosyllabic nouns.

Starting with the first observation, it seems most economical to suppose that the *i > *a change in these verbs only affected the perfect. The counterexamples like *heseb̲* 'he turned' can be explained as the result of analogical restoration of *i, which was unstressed and therefore retained in the first and second person perfect forms like *hăsibbóṭ̲å* 'you turned'. In the imperfect and related forms, however, the *i was stressed in almost all persons. Yet much fewer cases of *i > *a are found in the imperfect than in the perfect, which is hard to explain by an appeal to analogical restoration based on so few forms in the paradigm. What, then, is the difference between the perfect and the imperfect that caused the former to be affected by Philippi's Law while leaving the latter untouched?

The most important difference between the perfect forms and the imperfect forms is the vowel in the prefix. Thus, the perfect *hepār* 'he broke (pause)' has an *e* in the first syllable, while the imperfect *yåpēr* 'he will break' has an *å*. We may posit, then, that at least in polysyllables, *e was not lowered to *ɛ (> *a*) before geminates, except where another *e preceded it: a dissimilatory change. Thus, *heperr > *hepɛrr 'he broke', while *yāperr 'he will break' remained unchanged. This would then allow the second vowel of the perfect forms to participate in the subsequent development of *é > *á*, while preventing the imperfect forms from undergoing the same development.

Another issue is the different outcome of *i before geminates in the verbal forms and polysyllabic nominal forms: *a* or *e* in the former, ɛ in the latter. As we have just seen, the verbal forms are most easily explained by positing that Philippi's Law did not operate on (*i >) *e before geminates in polysyllables, except after another *e. Thus, the group of words like *barzɛl* 'iron' listed above should not be expected to participate in Philippi's Law at all – and it may fairly be said that they do not, as their *i yields ɛ, rather than the *a* which is found in all other categories (the ɛ of segolates like *mɛ́lɛk̲* 'king' also goes back to *a < *i). Rather, this sound change should be seen as an independent development. Blake (1950) and Lambdin (1985) note that this change only occurs before a few different consonants: they list *m*, *n*, *l*, and, in Lambdin's case, *t*. This collection of phonemes does not form a natural phonetic class, and they do not result in a plausible conditioning for a sound change. On closer inspection, though, *m* is a bit of an odd man out. The main

purpose of its inclusion in this group is to explain the *sḡol* in the second and third person masculine plural suffixes *-hɛm*, *-k̲ɛm*, *-tɛm*, and the related personal pronoun, *ʾattɛm* 'you (m.pl.)'. In chapter 8, it will be argued that the vocalization of these endings is based on their feminine counterparts in *-ɛn*. Excluding *m*, then, we are left with *n*, *l*, and *t*, which are all coronal consonants. Thus, the words like *barzɛl* 'iron' can be said to have undergone a change of stressed *e > ɛ before a geminate coronal in a non-initial syllable. As this vowel did not shift to **a*, it must still have been *e when Blau's Law was operative. This conditioned sound change of *e > ɛ should also have affected *hip̄ʿil* imperfect forms from geminate roots with a coronal second radical, like *yåqel* 'he will lighten', but in these words, the *i or *e could easily be restored based on similar forms where it did not precede a coronal.

In summary, the development of (*i >) *e before geminates, including *nC clusters, can be described by the following rules (see the next section for examples):

1. In monosyllables, stressed *e > *ɛ before *nC, as before other clusters of two consonants. Before geminates, *e remained unchanged.

2. In polysyllables, stressed *e > *ɛ after *e in a previous syllable. Elsewhere, *e before geminates remained unchanged.

3. These new cases of stressed *ɛ before two consonants (including geminates) participated in the next stage of Philippi's Law (i.e. *ɛ́ > *á*, Blau's Law), yielding Biblical Hebrew *a*.

4. After the operation of Blau's Law, stressed *e > *ɛ before geminated coronal consonants in polysyllabic words.

6.4 Conclusion

Combining the regular sound changes that had already been identified by previous authors and the conclusions reached above, we can formulate the following six rules. Together, they account for the development of original *i in stressed, closed syllables. As has been indicated in the text above, all apparent exceptions to these rules can plausibly be explained as being the result of analogy. In chronological order, the rules are:

1. *i > *e in all positions. This was a very early sound change, which preceded even the contraction of triphthongs (see chapter 5). As there was no Proto-Northwest-Semitic /e/, this was originally a purely allophonic change, without any effects on the inventory of phonemic vowels.

2. Stressed *e > *ɛ before two different consonants in word-final and word-internal syllables. We may restrict the appellation 'Philippi's Law' to this development, for the sake of clarity, and because it covers the cases which were actually suggested by Philippi (1878). This sound change preceded the assimilation of *n to following consonants and postdated the second apocope of word-final short vowels (see chapter 4). Thus, *bént 'daughter' > *bɛ́nt, *ṣédq 'righteousness' > *ṣɛ́dq, *kabédta 'you (m.sg.) were heavy' > *kabɛ́dta. *šénn 'tooth', *barzéll 'iron', *qédmah[19] 'eastwards' and similar forms are unaffected.

3. Stressed *e > *ɛ / eC_C:. Thus, *hepérr 'he broke' > *hepɛ́rr. *yāpérr 'he will break' and similar forms are unaffected.

4. Unstressed *e > *ɛ in word-final syllables. This sound change must predate the pausal stress shift (Blau 1981). Thus, *ḥaṣer- 'court (construct)' > *ḥaṣɛr-, *šenn- 'tooth (construct)' > *šɛnn-, *wayyélek 'and he went' > *wayyélɛk.

5. 'Blau's Law' (Woodhouse 2004): stressed *é > *á, including previously unstressed vowels which have secondarily been stressed. This sound change must postdate the Greek and Latin transcriptions, as well as pausal lengthening and the pausal stress shift (Blau 1981). Thus, *ṣédq > *ṣádq, *hepɛ́rr > *hepárr, > *ḥaṣɛ́r > *ḥaṣár, *wayyēlɛ́k 'and he went (pausal form)' > *wayyēlák. *šɛnn-, *wayyélɛk 'and he went (context form)' and similar forms are unaffected.

6. Stressed *e > *ɛ before geminate coronals in polysyllables. Thus, *barzéll > *barzɛ́ll. *šénn and similar forms are unaffected.

[19] Or *qédmā.

7 The Law of Attenuation and other cases of unstressed *a > *i

7.1 Introduction

Like 'Philippi's Law' (chapter 6), the 'Law of Attenuation' is a cover term, used to describe several instances of the same phenomenon. The development that it refers to is related to Philippi's Law in another way, too, as it is more or less its opposite: while the latter covers the shift of stressed *i > *a, the Law of Attenuation is said to change unstressed *a > *i in closed syllables.

We shall see that there is no one Law of Attenuation, but rather, several separate developments of *a > *i and *a > *e > *i. After a review of the literature, which will identify those cases in which the Law of Attenuation has been said to operate and examine various proposed sound laws, the remaining issues will be identified and discussed in detail.

7.2 Previous suggestions

7.2.1 Brockelmann (1908)

Brockelmann (1908) does not go into too much detail about the Law of Attenuation. On page 146, he states that short *a in closed syllables is coloured by surrounding consonants in Hebrew and Aramaic. Noting that "[the shift of *a to *i] seems to gain more and more ground everywhere in the younger tradition"[1] (ibid.), Brockelmann's wording seems to acknowledge that this is the combined effect of several different developments. In what must be a late development, as it is not yet reflected by the Greek and Latin transcriptions, the Tiberian reading tradition "almost" (*fast*) only preserves *a before laryngeals, *l* and *r*, and geminates. Thus,

[1] ... *scheint überall in der jüngeren Überlieferung ... immer weiter um sich zu greifen.*

while *a became *i in words like *miḏbår* 'wilderness' < *madbār, cf. the Septuagint transcription μαδβαρ, the *a is retained in words like *malʾåḵ* 'messenger', *maʿăyån* 'source', and *mattånå* 'gift'. Brockelmann holds the same conditioning responsible for the different vocalization of *malḵe* 'kings (construct)' vs. *diḇre* 'words (construct)', *laḥmi* 'my food' vs. *ziḇḥi* 'my sacrifice', etc. Another conditioning factor is mentioned on page 255: Brockelmann sees the non-operation of the Law of Attenuation before *i* in words like *taḵliṯ* 'end' as a form of dissimilation, as it does occur in formally similar words without following *i*, like *tiṗʾéreṯ* 'glory'.

The "almost" in Brockelmann's formulation of the Law's conditioning is imprecise, and consequently, the continued presence of *a > *a* in this environment, e.g. in *maṭmon* 'treasure', remains unexplained.

7.2.2 Bauer & Leander (1922)

Bauer & Leander (1922: 193–194) expand the categories of words in which the Law of Attenuation is said to have operated. Like Brockelmann (1908), they hold that the Law should have affected all short *a in closed, unstressed syllables, except those adjacent to gutturals or preceding *l* and *r*. They do not explicitly list all categories which should have been affected, but their examples include the first vowel of the *piʿel* perfect, like *pittaḥ* 'he opened' besides Classical Arabic *fattaḥa*; the prefix vowel in *qal* and *niṗʿal* imperfects, like *yippåṯaḥ* 'it will be opened' besides Classical Arabic *yanfatiḥu*; and unprefixed nouns like *ʿizzim* 'goats' besides *a* in the Classical Arabic singular *ʿanzun*, an exception to the retention of *a following gutturals.

Bauer & Leander are not very confident about the conditioning, referring to "the random alternation between *a* and *i*"[2] (p. 194). Identifying reliable rules would be preferable.

7.2.3 Blake (1950)

Aiming to discuss all instances of *a/*i interchange (see chapter 6 for Philippi's Law), Blake (1950) narrows down the conditions of the *a > *i shift. He starts off by establishing that some of the supposed examples of the Law of Attenuation should actually be reconstructed with *i (pp. 76–77): most importantly, he mentions cases like *yliḏtíḵå* 'I have begotten you (m.sg.)', adduced by Bauer & Leander

[2] *Das regellose Schwanken zwischen* a *und* i . . .

(1922), and notes that some *miqṭål* nouns might go back to a *miqṭalum pattern, attested in other Semitic languages as well, besides the more common *maqṭalum. He then formulates a sound law to cover the remaining cases, stating it as follows:

> The change from unaccented *a* to *i* takes place in a number of cases when a closed syllable containing the unaccented *a* is followed by another closed syllable also containing an *a* with either primary or secondary accent; in other words, it seems to be a process of dissimilation that takes place in types which may be represented by *qatqát* or *qatqàt*, changing them to *qitqát* or *qitqàt*. (p. 77)

In this way, he explains the *i* of the *nip̄ʿal*, *piʿel* and *hip̄ʿil* perfects, the nominal forms discussed by Bauer & Leander (1922), and several isolated nouns. Blake attributes the spread and occasional blocking of this sound change to analogy; the absolute state of *maqṭalum nouns, for instance, should have yielded **maqṭål in his account, but it analogically changed its first vowel to the *i resulting from the sound change in the construct state *maqṭal > *miqṭal*. Additionally, as previous authors have also noted, "[t]he change is usually prevented by adjacent laryngeals [= gutturals] or *r*" (p. 78).

Blake provides an excellent discussion of all the various examples and possible exceptions to his sound law. Unfortunately, his explanation does not account for all the data. By limiting the sound change to words with a following (short) *a, he must postulate a very large number of analogical changes, often with the less frequent form influencing the more frequent part of the paradigm. If the absolute state of the *maqṭalum pattern should have yielded **maqṭål, for instance, it is hard to explain why not one such form is actually attested, except where *a precedes gutturals (like *maḥšåḵ* 'dark place'), geminates (like *maddåʿ* 'knowledge') and *l* (like *malʾåḵ* 'messenger'), the conditions already identified by Brockelmann (1908). More seriously, this postulated sound change cannot be dated without encountering some contradictions. If it affected *diḇre* 'words (construct)', < *dabray in Blake's account, it must have preceded the contraction of unstressed diphthongs, as the word would otherwise have developed from *dabray > *dabrē > **daḇre*; but this is incompatible with the evidence from words like *meṭaḇ* 'best (construct)' < *mayṭabu, which must still have had *a when its diphthong was contracted from *ay > *ē. While this, too, could be attributed to analogy, it is not a very elegant solution.

7.2.4 Rabin (1960a)

Much like Blake (1950), Chaim Rabin (1960a) discusses both Philippi's Law and the Law of Attenuation in one and the same article. In fact, his scope is even broader, covering the development of all historically short vowels. Aiming to provide a "diachronic–structural" (דיאכרוני־מבני) account of these developments (p. 181), Rabin posits that *a and *i merged into one phoneme, which he represents as /ə/, in all closed syllables (p. 182). "Thus, we can say that in closed syllables, the 'small' vowels [*i*], [ɛ], and [*a*] are merely variants of the phoneme /ə/" (ibid.).[3]

Rabin then considers the phonetic conditioning that determines the surface realization of this phoneme /ə/, which is usually *a* in stressed syllables (traditionally seen as the outcome of Philippi's Law) and usually *i* in unstressed syllables (traditionally seen as reflecting the Law of Attenuation). The details of Rabin's account need not concern us, as the basic premise upon which it rests cannot be maintained. The phonemic contrast between */i/* and *a* in unstressed syllables is clearly demonstrated by minimal pairs like *yir›ɛ* 'he will see' versus *yar›ɛ* 'he will show', very similar to examples cited by Rabin himself on page 172; in stressed syllables which did not undergo Philippi's Law, where *i is reflected by *e* (see chapter 6), the distinction was also maintained, cf. *ʿez* 'goat' versus *ʿaz* 'strong'. While we may agree that *i and *a merged in syllables where Philippi's Law was operative, then, they remained distinct phonemes in some closed syllables, at least. No unconditioned merger of *i and *a can explain the attested shifts from *a to *i*.

7.2.5 Harviainen (1977)

Tapani Harviainen discusses the topic of attenuation at length in his book on the development of Hebrew vowels in unstressed, closed syllables. He takes a great deal of evidence into account, mainly focusing on the Palestinian and Babylonian vocalizations, Greek and Latin transcriptions, and post-Biblical Hebrew and Aramaic language varieties. On page 199, he concludes that attenuation originally took place in "certain verbal prefixes in Hebrew and in Aramaic", an early, pre-Amarna Letters development. Other cases of *a > *i are to be distinguished from this first change. This having taken place in "certain dialects, either geographical or social, of spoken Hebrew", the Hebrew reading traditions ended up with a variation between forms with *a and forms with *i, originating in different dialects

[3] כן נוכל לומר, שבהברה סגורה התנועות הקטנות [ִ], [ֶ], [ַ] אינן אלא ביצועים של הפונימה /ə/.

or sociolects. Which form was recorded in the vocalization, then, was a more or less arbitrary choice, made by the Masoretes of the various traditions.

This explanation is not implausible, but as is often the case with supposed cases of dialect borrowing, it is unfalsifiable. If the distribution of the *a > *i change could be explained from within one single dialect, that would be a stronger explanation.

7.2.6 Lambdin (1985)

In his article on Philippi's Law (see chapter 6), Thomas Lambdin touches on the subject of the Law of Attenuation, as it interacts with the former development in several ways. He mostly follows Blake (1950), seeing the Law of Attenuation as a *qaṭqáṭ > *qiṭqáṭ dissimilation rule, but he notes (p. 139) that the prefix vowel of the *nip̄ʿal* perfect, treated as an example of this law by Blake, must be the result of a different development, for two reasons:

> In the first place, the Niphal prefix *ni-* is shared by all of the Hebrew traditions, perhaps including Samaritan, and therefore belongs to a level earlier than the *qatqát>qitqát* of the preceding paragraph [which is limited to Tiberian Hebrew]. In the second place, there is a qualitative difference in the results of the presumed dissimilation: the treatment of the vowel before gutturals (e.g., *neʿĕbar*) and doubled consonants (e.g., *nittan*) is completely different from that of **maqtal>miqtāl* (e.g., *maʿăbār*, *mattān*). In general, the Niphal prefix *ni-* finds a closer phonetic parallel in the Qal Imperfect prefix *yi-* of the type *yiqtal*.

Lambdin cautions (p. 144) that while these *i vowels behave similarly, they need not have the same origin themselves, a point that is elaborated by Qimron & Sivan (1995).

7.2.7 Huehnergard (1992)

We have seen above that Bauer & Leander (1922) and Blake (1950) consider the *i* in the first syllable of the *piʿel* perfect to be the result of the Law of Attenuation, deriving from earlier *a. In an insightful article on the shape of the *piʿel* perfect in general, John Huehnergard postulates a separate sound law to explain this development, separating this case of *a > *i from those discussed by other authors; the general shape of the sound law is already hinted at by Lambdin (1985: 144).

Based on the cognate forms in Aramaic, *qaṭṭel*, and Ugaritic, /qaṭṭila/, Huehnergard reconstructs *qaṭṭila as the Proto-Northwest-Semitic form of the *piʿel* perfect. As Phoenician also has an *i vowel in the first syllable of this verbal stem, and it can be posited for Amarna Canaanite based on the occurrence of *i in the closely related *hiphʿil* perfect prefix, he concludes that this development of *a > *i is a Proto-Canaanite sound change. Its non-occurrence in the imperfect, *yVqaṭṭilu > *yqaṭṭel*, shows that it only operated in word-initial syllables. Huehnergard sees the same sound change as the source of the Hebrew *qiṭṭel* adjectives like *ʿiwwer* 'blind', which should derive from *qiṭṭilum. This pattern is not attested in other Semitic languages, but *qaṭṭilum is, with similar semantics, in Akkadian. Interestingly, the expected outcome of *qaṭṭilum, **qaṭṭel*, is not attested in Biblical Hebrew.[4] Thus, this adjectival pattern seems to have shifted from *qaṭṭilum > *qiṭṭilum, parallel to the change in the vocalization of the *piʿel*. As associated *qaṭṭélɛṯ* abstracts, like *ʿawwérɛṯ* 'blindness', could derive from a *qaṭṭiltum pattern (with *i > *a in the second syllable due to Philippi's Law, see chapter 6), Huehnergard holds the sound change only to have affected stressed vowels, assuming that the relevant proto-language was stressed like Classical Arabic: thus, *qáṭṭilum developed to *qíṭṭilum, but *qaṭṭíltum remained unchanged. A distribution like that of the *qaṭṭil(t)um nominals is found with the *qaṭṭul(t)um patterns: **qaṭṭol* < *qaṭṭulum is not attested, while *qaṭṭólɛṯ* < *qaṭṭultum is, leading Huehnergard to conclude that "a more general proto-Canaanite rule may be proposed: $a > V_1$ / #C′_$C_1C_1V_1$" (p. 226), i.e., stressed short *a* in a word-initial syllable preceding a geminate assimilates to the following short vowel. The newly created *i in the *piʿel* perfect was then analogically extended to the *hiphʿil*: *yVqaṭṭilu (*piʿel* imperfect) : *qiṭṭila (*piʿel* perfect) = *yVhaqṭilu (*hiphʿil* imperfect) : *hiqṭila (*hiphʿil* perfect).

While this sound law adequately accounts for the data, the phonetics of its conditioning are strange: a stressed vowel undergoing assimilation while its unstressed counterpart does not is unexpected. Rather, we should expect stressed vowels, which are by definition more phonologically prominent than unstressed vowels, to be more resistant to assimilation, not more susceptible. The cases of *a/*i alternation in cases like *ʿiwwer* 'blind' besides *ʿawwérɛṯ* 'blindness' do strongly suggest that this was a conditioned sound change, and stress is a likely candidate

[4]The one possible exception, *ʾaḥer* 'other', probably comes from *ʾaḫirum, cf. the plural *ʾăḥerim* < *ʾaḫirīma, not **ʾaḥerim* < *ʾaḫḫirum. The presence of *a* rather than expected **å* in the singular, *ʾaḥer* instead of **ʾåḥer*, is then due to the surrounding gutturals; see chapter 4 for more examples of *å > *a* near gutturals. There are also the *piʿel* infinitive and imperative, *qaṭṭel*, but these have preserved their *a due to analogy with the imperfect.

for the conditioning factor: unstressed vowels assimilating to a following stressed vowel, for instance, would be very plausible. For such a sound law to explain the data, however, we would need pre-Proto-Canaanite to have had a stress system which would have resulted in *ˁawwírum (> *ˁiwwírum) being stressed on the second syllable, while *ˁáwwirtum was stressed on the first syllable. Not only is such a stress system completely ad hoc, but it is also typologically very unlikely. In stress systems that take syllable weight into account, heavy syllables tend to attract the stress, when present (Van der Hulst 2010: 38). If the system dictates that the stress fall on the word's first heavy syllable, both *ˁáwwirum and *ˁáwwirtum should be stressed on the first syllable; if the system dictates that the stress fall on the last heavy syllable, this results in *ˁawwirúm and *ˁawwirtúm, or, if the final syllable can never be stressed (as in the 'Classical Arabic' stress system; see chapter 4 for the artificiality of this notion, however), *ˁáwwirum and *ˁawwírtum, as Huehnergard suggests. No typologically plausible stress system would yield *ˁawwírum and *ˁáwwirtum.

It may be significant, however, that precisely the words with the feminine suffix *-t- do not participate in the assimilation. Throughout the Semitic languages, this suffix is found to alternate with *-at-, a seemingly synonymous allomorph. In Hebrew, this alternation even occurs within paradigms of the same word, as in the absolute state *mamlå̱kå* 'kingdom' < *mamlakatum vs. the construct state *mamlɛ̱́kɛ̱t* < *mamlaktu and the suffixed forms like *mamla̱kto* 'his kingdom' < *mamlaktahu. Occasionally, the vowelless form of the suffix is analogically extended to the absolute state: for normal *maṣṣeḇå* 'massebah' < *maᵗṣ̣ᵗṣ̣ibatum, we find *maṣṣɛ̱́bɛ̱t* in the absolute state in 2 Sam 18:18. If the alternation found in *mamlɛ̱́kɛ̱t* and other words was originally more widespread, this may solve the problem of the conditioning of vowel assimilation. Assuming that words were regularly stressed on their penultimate syllable, as must be the case for some reconstructed stage of pre-Hebrew (see chapter 4), *ˁawwírum would have undergone assimilation of unstressed *a before a geminate to the following stressed *í, while the original absolute state *ˁawwirátum did not undergo the change, as the stress did not immediately follow the syllable with *a in it. Later, the original non-absolute form of the stem, *ˁawwirt-, analogically intruded into the absolute state, as in the case of *maṣṣɛ̱́bɛ̱t*. The rule may then be modified to state that *a assimilated in quality to a stressed, short vowel in the following syllable if a geminate intervened. Interestingly, as this is a Proto-Canaanite sound change, this

implies that the penultimate stress system of pre-Hebrew goes back to that stage of the language.

7.2.8 Qimron & Sivan (1995)

After a review of the previous literature, Elisha Qimron and Daniel Sivan note that the various cases of *a (> *e) > *i that are normally treated as the results of the Law of Attenuation (as by Blake 1950) can be separated into three different groups, reflecting at least three different developments (pp. 16ff.):

1. Cases that are shared by all of Northwest Semitic. This category is limited to the result of the Barth–Ginsberg Law (Barth 1894b: 4–6), which states that originally, the prefix vowel in the prefix conjugations of the G-stem (*qal*) was *i if the stem contained an *a (i.e. *yiqṭal-, as in Ugaritic and Amarna Canaanite), but *a elsewhere (*yaqṭul-, *yaqṭil-).

2. Cases that are shared by all Hebrew traditions, but not by all Northwest Semitic languages. This category is limited to the prefix vowel of the *nip̄ʿal* perfect, which is *neqṭal in Proto-Hebrew, but *naqṭala in Ugaritic and Amarna Canaanite.

3. Cases that vary between the various Hebrew traditions. This category is the main topic of the article.

First and foremost, Qimron and Sivan discuss nouns of the *miqṭål* pattern and similar forms. They see this uniquely Tiberian case of attenuation as dissimilatory in nature, like Blake (1950) and Lambdin (1985). In their formulation, the first of two a-vowels[5] in nouns with four consonants becomes *i* (p. 20): *CaCCaC > *CiCCaC and *CaCCåC > *CiCCåC. Thus, for example, *mab̲ṣar > *mib̲ṣar* 'fortification (construct)', *mak̲tåb̲ > *mik̲tåb̲* 'writing'. The sound change also operates in words in which the word-final syllable is open (p. 22): *taqwå > *tiqwå* 'hope'. It is blocked before geminates (*maddåʿ > *maddåʿ* 'knowledge'), following or preceding a guttural (*maʿbar > *maʿăb̲ar* 'ford (construct)'), in reduplicated nouns (*galgal > *galgal* 'wheel'), and sometimes before *r* and *l* (*marʾå > *marʾå* 'view', but *qaryå > *qiryå* 'village'); *a was analogically restored in the *hip̄ʿil* feminine participle *maqṭɛ́lɛt̲*. A few other words also resist the sound change

[5] *a, *å, and, only explicitly included on page 35, *ɛ.

(p. 26), all of which are either loanwords (like *paṯ-bag̱* ‘dinner table’, from Persian) or are not stressed on either of the relevant a-vowels (like *mašmannim* ‘festival dishes’), a possibly relevant factor which the authors do not mention.

The rest of the article goes on to discuss several categories that might be considered to have undergone the Law of Attenuation, but which the authors wish to exclude from the sound law formulated above. The occurrence of *miqṭol* nouns besides *maqṭol* forms is attributed to an original difference in the prefix vowel (pp. 27–28). The *i* in plural construct states like *diḇre* ‘words (construct)’ < *dabaray is argued to be an auxiliary vowel, not the result of attenuation, one of the arguments being that the Babylonian vocalization consistently has *i* in these forms, but *a* in non-attenuated forms like *maqṭål* (Tiberian: *miqṭål*; pp. 28–29). Apparent cases of attenuation in segolates are explained as morphological alternations, not the result of a phonological development (pp. 30–31), and *i* for normal *a* in verbal forms like *yliḏtiḵå* ‘I have begotten you (m.sg.)’ (besides *yåláḏti* ‘I have begotten’) is held to be the original vowel, which became *a* when stressed due to Philippi’s Law (pp. 31–33; see chapter 6); the latter explanation is also given for the feminine participle and other forms with the feminine *-t* suffix (p. 34). Finally, proper nouns are rightfully excluded from the investigation, as they can be shown to behave irregularly (pp. 33–34).

Qimron and Sivan offer a seemingly watertight sound law that explains the Tiberian change of *a > *i in *CaCCaC, *CaCCå(C) and *CaCCɛ nouns. The only condition that remains leaky is the law’s occasional non-occurrence before *r* and *l*. Additionally, not all of the explanations they give for other possible cases of *a > *i are as convincing, and some developments, like that of the *niṗ̄ʿal* perfect prefix, remain unexplained altogether.

7.2.9 Yuditsky (2010)

Qimron & Sivan (1995) state that the first vowel in construct state plurals[6] like *diḇre* ‘words (construct)’ is irrelevant to their topic; it is not the direct outcome of *a, but an auxiliary vowel which developed after the elision of unstressed, non-pretonic short vowels (dated to the third century CE by Beyer 1984: 128–136). This idea is taken up and developed in a recent article by Alexey Yuditsky. Listing all words attested in a *qVṭle* or *qVṭloṯ* construct state plural (pp. 64–65), he notes

[6]Including the form of the plural noun to which the ‘heavy’ second and third person plural suffixes are attached.

that in the Tiberian tradition, about half of them have an *a* vowel, while the other half have *i* (or ɛ, considered to be an allophone of /i/ here; *qɔṭl-* forms are mentioned but not considered). Yuditsky identifies three phonetic factors that are associated with an *a* vowel (p. 59):

1. If the second radical consonant is a guttural, the vowel is always *a*, e.g. *baʿăle* 'lords (construct)';

2. If the first radical is a guttural, the vowel is usually *a* (38 cases against 16 with /i/), e.g. *ʾaḇne* 'stones (construct)';

3. If the second radical is *r*, *l* or *n*, the vowel is usually *a* (44 cases against 13 with /i/), e.g. *malḵe* 'kings (construct)'.

Additionally, 8 words that do not match these criteria have *a*, like *napšoṯ* 'lives (construct)'; all other words have an i-vowel, like *biḡḏe* 'garments (construct)'. Yuditsky concludes that in the Tiberian tradition, the quality of the auxiliary vowel is mainly dependent on its phonetic environment.

As there are still some 34[7] words that form the construct state plural with a different vowel than Yuditsky's rules predict, the phonetic explanation does not cover all the data. The exceptions, however, could have taken their vowel from other forms of the same paradigm where it originated phonetically, in an analogical process of paradigmatic leveling. Thus, *pirḏehɛm* 'their mules' should have *a* according to Yuditsky's phonetic rules (***parḏehɛm*), but it could have taken over the *i* found in the singular suffixed form, *pirdo* 'his mule'. That the vowel must have been conditioned phonetically in some cases, at least, is shown by words like *ʾanše* 'men (construct)', as the associated singular, *ʾiš* 'man', does not have *a* anywhere else in the paradigm. For Yuditsky's rules to hold up, then, all their exceptions must have the relevant vowel in some other part of the paradigm, which could then serve as the origin of an analogical vowel change. This seems to be the case. Of the eight words that have *a* for expected ***i*, for instance, seven have *a* (or *a) in another part of the paradigm, e.g. *napšoṯ* 'lives (construct)' from the singular *nɛ́pɛš* 'life' < *napš. *šaḏmoṯ* 'terraces (construct)', from *šḏemå* 'terrace', however, remains problematic, as no *a* should occur in any other form of the word. A few other words appear to break the rules, but might take their vowel

[7] Three of the exceptions have a guttural first radical and *r*, *l* or *n* as their second radical, so the numbers given above cannot simply be added up.

from unattested forms of the paradigm; thus *ḥizqe* 'strong (construct)' from *ḥåzåq* 'strong (m.sg.)' with *i* after a guttural, possibly from unattested **ḥizqaṯ*[8] 'strong (f.sg. construct)', or *pirṣehɛn* 'their breaches' from *pérɛṣ* with *i* before *r*, possibly from unattested ***pirṣ-* before suffixes in the singular. The unexpected *i* before *l* in *yilḏe* 'children (construct)' may be explained by an additional, phonetically plausible rule that *i* occurs after *y*, even when *r*, *l* or *n* follows; the alternative form, *yalḏe* 'idem', would then be the result of analogy with the forms with *a found in the rest of the paradigm, like *yɛ́lɛḏ* 'child' < *yald.

Morphologically different but phonologically similar parallels can be found in three other forms that have been seen as the result of attenuation: *dimḵɛm* 'your (m.pl.) blood' and *yɛḏḵɛm/yɛḏḵɛn* 'your (m./f.pl.) hand'. As *dåm* 'blood' and *yåḏ* 'hand' are both *qaṭum nouns, their original *a was in an open, unstressed, non-pretonic syllable in these forms, e.g. *damVḵémm, just like the *a in the construct state plurals discussed above. The *i*/ɛ that is attested in these forms, then, is another instance of the same auxiliary vowel, which obeys Yuditsky's rules in these cases as well.

To sum up, the distribution of *a*- and *i*-vowels in construct state plurals is complex, but when allowance is made for the workings of analogy, Yuditsky's rules, which have been shown to be tenable, go a long way towards an explanation. We are dealing with different reflexes of an auxiliary vowel that appeared after the elision of unstressed short vowels in the third century CE (Beyer 1984). As the development is shared by the Tiberian and Babylonian traditions (Qimron & Sivan 1995), it is probably to be dated earlier than the attenuation seen in *maqṭāl > *miqṭål* nouns and similar forms.

7.2.10 Summary

We have seen that many different cases of *a (> *e) > *i have been identified by previous scholars. The following conclusions can be drawn from this review of the literature:

- The *a > *i change in *maqṭalum and similar patterns seems to be nearly completely explained by Qimron & Sivan (1995). When the change occurs before *r* and *l* needs clarification.

[8] Itself with attenuated *i* < *a due to Qimron & Sivan (1995)'s rule.

- The *i* in the first syllable of the *piʿel* and *hiphʿil* perfects, as well as the development of *qaṭṭilum > *qiṭṭel* adjectives, is adequately explained by Huehnergard (1992). The sound law can be made phonetically more plausible by changing the stress conditioning and the reconstructed stress system of Proto-Canaanite.

- The distribution of *a and *i vowels in construct state plurals is adequately explained by Yuditsky (2010). His rules also explain the occurrence of *i*/ɛ in *dimk̲ɛm* 'your (m.pl.) blood' and *yɛd̲k̲ɛm/yɛd̲k̲ɛn* 'your (m./f.pl.) hand'.

- The *a > *i change in the *niphʿal* perfect prefix, the imperfect prefixes of the fientive *qal*, and in some segolate forms before suffixes must still be explained.

7.3 Remaining issues

7.3.1 Attenuation before *l* and *r*

Qimron & Sivan (1995: 25–26) list the examples and counterexamples of attenuation before *r* and *l* given in tables 7.1 and 7.2. To these, we may add attenuated *mirbaṣ* 'resting place (construct)', *mirzaḥ* 'banquet (construct)', *mɛrḥåq* 'distance', *mirkɛ́b̲ɛt̲* 'chariot (construct)', and *mirʿɛ* 'pasture ground'; and unattenuated *marʾɛ* 'sight', *parbår* 'court', *parså* 'cloven hoof', *yaldå* 'girl', *malkå* 'queen', *malmad* 'goad (construct)', *śalmå* 'dress', and *šalwå* 'ease'.

Of these, some words must be excluded. *mirbå* and *šalʾănån* are probably corrupt (Koehler & Baumgartner 1994–2001: 967, 1502), and *sirpad̲* is of uncertain etymology. *karpas*, *tartån*, *parbår* and its plural *parwårim*, *mɛlṣar* and *meltåḥå* are late loanwords;[9] if they were still current in spoken Aramaic at the time the Tiberian vocalization was codified, their known pronunciation may have prevented attenuation of their first vowel, or, contrarily, they may have been borrowed with an i-vowel. The non-attenuation of *dardar* and arguably *qarqaʿ* is already covered by Qimron & Sivan's observation that attenuation does not take place in reduplicated syllables, and *ʾalmån* is covered by their rule that it does not occur after gutturals. *ʾɛlgåb̲iš* should not undergo attenuation either, as its first consonant

[9] Loaned from Sanskrit (by way of Persian?) *karpāsa-* 'cotton plant', Assyrian /tartānu/ 'high official', Persian *fra-bar* 'court' or a related Iranian form, Akkadian /maṣṣāru/ 'guard', and Akkadian /maštaktu/ 'wardrobe', respectively (Koehler & Baumgartner 1994–2001: 500, 1799, 962, 594).

Table 7.1: Attenuation and lack thereof before *r* according to Qimron & Sivan (1995)

attenuated		unattenuated	
BH	meaning	BH	meaning
mirbå	see text	*barqɔ̆nim**	‘threshing sledge?’
mirmå	‘deceit’	*dardar*	‘thistles’
mirmås	‘trampled down pasture ground’	*karpas*	‘fine cotton’
mirpaś	‘muddied water (construct)’	*marṣépɛ̄t*	‘pavement’
mirqáḥat	‘ointment mixture’	*marḥéšɛt*	‘cooking pan’
miršáʿat	‘wickedness’	*marˀå*	‘vision’
sirpad	‘stinging nettle’	*marbaddim*	‘coverlets’
*pirḥaḥ**	‘brood?’	*markåbot*	‘chariots’
qiryå	‘town’	*markbot*	‘chariots (construct)’
mɛrḥaqqim	‘distant lands’	*marḥaqqim*	‘distant lands’
mɛrḥåb	‘spacious place’	*tartån*	‘commander’
mɛrkåb	‘saddle’	*parwårim*	‘courts’
mɛrkåbå	‘chariot’	*qarqaʿ*	‘floor’
mɛrqåḥim	‘scented herbs’	*sarʿappoṯåw*	‘boughs’
mɛrqåḥå	‘ointment pot’	*śarʿappåy*	‘my disquieting thoughts’

*These are the attested forms in the Leningrad Codex; Qimron & Sivan write *pirḥåḥ* and *barqånim*, respectively.

Table 7.2: Attenuation and lack thereof before *l* according to Qimron & Sivan (1995)

attenuated		unattenuated	
BH	meaning	BH	meaning
zilʿåpot	‘irritation’	*balʿăde*	‘except’
bilʿådékå	‘except for you (m.sg.)’	*zalʿåpå*	‘irritation’
bilʿåday	‘except for me’	*zalʿăpot*	‘fits (construct)’
milḥåmå	‘battle’	*malˀåk*	‘messenger’
tilbóšɛt	‘raiment’	*malˀăkut*	‘assignment (construct)’
ˀɛlgåbiš	‘sleet’	*ˀalmån*	‘widower’
mɛlṣar	‘guardian’	*šalˀănan*	see text
*mɛlqaḥáyim**	‘snuffers’	*malqåḥéhå*	‘its snuffers’
mɛltåḥå	‘wardrobe’		

*Qimron & Sivan and many manuscripts: *mɛlqåḥáyim*.

Table 7.3: Attenuation and lack thereof before *r* and *l*

attenuated		unattenuated	
BH	meaning	BH	meaning
mirmå	‘deceit’	*marṣépēɛ̲t*	‘pavement’
mirmås	‘trampled down pasture ground’	*marḥéšɛ̲t*	‘cooking pan’
mirpaś	‘muddied water (construct)’	*marʾå*	‘vision’
mirqáḥaṯ	‘ointment mixture’	*marb̲addim*	‘coverlets’
miršáʿaṯ	‘wickedness’	*markåb̲oṯ*	‘chariots’
qiryå	‘town’	*marḥaqqim*	‘distant lands’
mɛrḥaqqim	‘distant lands’	*sarʿappoṯåw*	‘boughs’
mɛrḥåb̲	‘spacious place’	*śarʿappåy*	‘my disquieting thoughts’
mɛrkåb̲	‘saddle’	*marʾɛ*	‘sight’
mɛrkåb̲å	‘chariot’	*parså*	‘cloven hoof’
mɛrqåḥim	‘scented herbs’	*zalʿåpå*	‘irritation’
mɛrqåḥå	‘ointment pot’	*malʾåk̲*	‘messenger’
mirbaṣ	‘resting place (construct)’	*malqåḥɛ́hå*	‘its snuffers’
mirzaḥ	‘banquet’	*yaldå*	‘girl’
mɛrḥåq	‘distance’	*malkå*	‘queen’
mirkɛ́b̲ɛṯ	‘chariot (construct)’	*malmad*	‘goad (construct)’
mirʿɛ	‘pasture ground’	*śalmå*	‘dress’
zilʿåpōṯ	‘irritation’	*šalwå*	‘ease’
bilʿåd̲ɛ́k̲å	‘except for you (m.sg.)’		
bilʿåd̲ay	‘except for me’		
milḥåmå	‘battle’		
mɛlqaḥáyim	‘snuffers’		

is also a guttural; it is attested with /a/ in Akkadian /algamešu/ and Ugaritic <algbṯ>, indicating a kind of precious stone, but the irregular correspondences between this word, its ‘cognates’ in other languages, and even alternative forms in Hebrew (*gåb̲iš* and *kåp̄is*, also cf. Akkadian /gamēsu/), which identify it as a loanword, mean we cannot be sure it ever had *a in Hebrew to begin with. *tilbóšɛṯ* does not have an a-vowel, so it does not belong in the current discussion. Finally, we may exclude the words with *šwå* or a *ḥåṭep̄* vowel following the non-attenuated *a*, as attenuation never takes place in this context. This leaves us with the words listed in table 7.3.

Considering the data, a purely phonetic account of the distribution of *a* and *i*/ɛ seems impossible. That analogy must have played some role is shown by the occurrence of the doublet *marḥaqqim*/*mɛrḥaqqim*; assuming both of these forms go

back to the same word, it seems sensible to see one form as the outcome of sound change, and the other as the result of analogy. The most economical approach, then, is to try and establish conditions that cover the majority of attested forms and are phonetically plausible, while accounting for the exceptions by positing reasonable analogies.

First of all, we may note that attenuation does not take place before unaccented[10] *a*. Thus, *marḇaddim*, *marḥaqqim*, *sarʿappoṯåw*, and *śarʿappay* all maintain their *a*, as do the assorted non-loanword exceptions listed by Qimron & Sivan (1995: 26), *mašmannim*, *mamtaqqim*, *manʿammehɛm*, and *mašʾabbim*. The words that do have an attenuated vowel, like *mɛrḥaqqim*, can easily have taken it from the singular, like *mɛrḥåq*, based on the model of words that did not change their prefix vowel in the plural.

If the vocalization of the Leningrad Codex is to be taken seriously, the unsuffixed form of the word 'snuffers' should be read as *mɛlqaḥáyim*. This should go back to an earlier form with a geminate *ḥ, *malqaḥḥáyim. The suffixed form *malqåḥɛ́hå* < *malqaḥḥéhå must then have undergone an otherwise unknown development of *aḥḥɛ > *aḥɛ > *åḥɛ. This is problematic; if we reconstruct the word as *malqåḥéhå, however, it has exactly the same vowels as *balʿåḏéḵå (see below), which does undergo attenuation. As no phonetically plausible explanation based on the different consonants in the two words is apparent, this would make it impossible to explain the different outcome of the *a in the first syllable. The problematic reconstruction as *malqaḥḥéhå should therefore tentatively be retained. Thus, the presence of unaccented *a and accented *ɛ in *malqaḥḥéhå do not seem to trigger attenuation; in *malqaḥḥáyim, however, the *a is accented, and the *a in the first syllable is attenuated to ɛ.

While *a only triggers attenuation when accented, then, forms like *bilʿåḏɛ́ḵå* show that even unaccented *å (as in *balʿåḏɛ́ḵå) was enough to cause the change to *i* or ɛ. The non-attenuation of *malqaḥḥéhå shows that the accented *ɛ is not the conditioning factor here.

mɛrkåḇå and the other forms of this paradigm show an interesting distribution, with *ɛ/i* in the singular and *a* in the plural. This is hard to match with the phonetic conditioning established so far, and analogy might be a more promising way of explaining the data. In the Hebrew Bible, the majority of singular attestations are in the absolute state (22, versus 5 in construct state or with suffixes, Even-

[10] As this sound change only affects the Tiberian tradition, it is probably late enough to speak of accentuation rather than stress.

Shoshan 1989), where attenuation may be expected to have yielded *markåb̲å > *mɛrkåb̲å*, while the majority of plural attestations is in the construct state or before heavy suffixes (13 attestations versus only 4 in the absolute state), yielding forms like *markb̲ot̲*. Given this distribution, if the more common prefix vowel in each number was generalized, this should yield the attested forms. Taking the words with consonants other than *r* and *l* following unstressed *a into account, a similar explanation might hold for a problematic form which is not mentioned by Qimron & Sivan (1995), *mamlåk̲å* 'kingdom'. The majority of the attested forms of this word are forms without *å* or accented *a*, like the construct state plural *mamlk̲ot̲*. As *mamlåk̲å* is quite a frequent word, however, an analogical explanation is less convincing here than in the case of *mɛrkåb̲å*.

Analogy may also explain the non-occurrence of attenuation in the *qaṭlå* nouns listed above. While most *qaṭlå nouns underwent attenuation, new forms with restored *a could be derived from an associated masculine *qaṭl noun.[11] The process is nicely illustrated by a doublet of words for 'ewe lamb': attenuation yields *kab̲śå > *kib̲śå*, while the related masculine *kab̲ś (> *kɛ́b̲ɛś*) 'male lamb' gave rise to a form with analogically restored *a, *kab̲śå*. Similarly, *yaldå* 'girl' can be based on *yald (> *yɛ́lɛd̲*) 'boy', and *malkå* 'queen' on *malk (> *mɛ́lɛk̲*) 'king'; the attenuated, non-analogical form of the latter is attested in the personal name *milkå* (Milcah). The masculine–feminine relationship is not as clear between *šalwå* 'ease' and *šalw (attested with a personal suffix in *šalwi* 'my ease'), but an analogical derivation does not seem implausible. Finally, *parså* 'cloven hoof' has a formal counterpart in *pars (> *pɛ́rɛs*), a kind of unclean bird, but other than the shared relevance for dietary laws and the occurrence of both words in the same passage (Lev 11), it is hard to see a real semantic connection. Perhaps *parså* took its *a* from its Aramaic cognate, *parst̲ā* (attested with this vocalization in Syriac); as this is a term of religious significance, however, the direction of borrowing is unclear.

This leaves us with only a few words in which the non-occurrence of attenuation cannot be explained by the following vowels or analogical restoration. In the case of *mar›å*, *mar›ɛ*, and *mal›åk̲*, the › following the *r* or *l* is a plausible inhibitor

[11] Given the late date of the sound change, *qaṭlum nouns had probably already developed into *qɛ́ṭɛl, a development which is reflected in the Babylonian tradition as well as the Tiberian one. The *qaṭl form of these nouns would still be preserved before suffixes, however. For the sake of clarity, both the attested Tiberian form and their pre-segolization form will be cited.

of attenuation. This is confirmed by the lack of attenuation in *maśˀaṯ* 'tribute (construct)'.

For both *malmaḏ* and *śalmå*, no analogical base for the retention of *a is available. A phonetic explanation based on the *lm* cluster following the *a* is made especially likely by the occurrence of an attenuated synonym of *śalmå*, *śimlå*. Both words go back to *śamlå, as is reflected by Classical Arabic *šamlatun*; *śalmå* underwent metathesis of *ml > *lm, while *śimlå* underwent attenuation. There are no unambiguous examples of attenuation before a *Cm cluster, as *mirmå* and *mirmås* could be formed with a *mi- prefix, rather than *ma-. As the evidence is scarce, this condition can almost be formulated as narrowly or broadly as one likes. Most conservatively, we may state that attenuation did not take place before *lm clusters; to push the conditioning as far as it will go, we could say that it did not take place before clusters of any consonant and a nasal, as there is no convincing evidence for attenuation or lack thereof before *n* at all.

marṣépēɛṯ and *marḥéšɛṯ* remain unexplained. As in two other exceptions which are not mentioned by Qimron & Sivan (1995), *maṭwɛ* 'yarn' and *maswɛ* 'veil', their unattenuated *a* is followed by an ɛ. Attenuation did normally take place before accented ɛ, though, as is shown by the great number of *miqṭélɛṯ* and *miqṭɛ* nouns. Perhaps these four exceptions have been vocalized as *hiphˁil* participles, in which the *a was analogically restored, but there is no real semantic motivation to support this. The non-attenuation in *zalˁåpå*, finally, defies explanation.

7.3.2 The *niphˁal* perfect prefix

As is noted by Lambdin (1985) and Huehnergard (1992), the change of *a > *i in the *niphˁal* perfect prefix must not be identified with the similar development in the first syllable of the *piˁel* and *hiphˁil* perfects. For one thing, the conditioning is different: in open syllables, the *hiphˁil* also has *i, as in *heqim* < *hiqīma 'he erected', while the *niphˁil* has maintained its *a there, as in *nåsoḡ* < *nasōga 'he turned back'. If Huehnergard is correct, however, the *i in the *hiphˁil* was introduced analogically, both in open and closed syllables, so it could have spread to some categories in the *hiphˁil*, but not in the *niphˁal*. More convincingly, the sound changes are shown to have taken place at a different time by the evidence from Amarna Canaanite, which attests a *hiphˁil* form with *i in *ḫi-iḫ-bi-e* /hiḫbiˀ(a)/ 'he hid' (EA 256:7), but *niphˁal* forms with *a like *na-az-a-qú* /nazˁaqū/ 'they were rallied' (EA 366:25).

While the fact that this change in the *niqʿal* prefix is a separate development was noted by Lambdin (1985), its precise conditioning has not yet been established. Garr (1993) takes the origin of the *ni*-prefix in *na- as read (*pace* Koller 2013), and rightfully so, but does not discuss exactly how and when the change from the latter to the former took place. Qimron & Sivan (1995: 19) note that the change is shared by all Hebrew traditions and transcriptions, but not by Northwest Semitic in general or Amarna Canaanite, making it a later development than the Barth–Ginsberg Law (see below).

This sound change, then, must have operated at some point between Proto-Canaanite and Proto-Hebrew. To be precise, we are probably dealing with an original change of *a > *e, as is witnessed by the ε in Secunda forms like νεμσαλ (Tiberian *nimšal*) 'it was like' (Brønno 1943). The sound change only affected the *niqʿal* perfect prefix,[12] as other instances of unstressed *a in closed syllables, like those discussed above, were preserved until later times. This may be attributed to phonetic characteristics of all these cases in which the sound change was not operative. The pattern of the *niqʿal* perfect, *naqṭal or *naqṭala, would not have been matched by nouns at any time: noun stems ending in a single consonant would have already undergone tonic lengthening (see chapter 4) – like *maqṭāl – or still have preserved their case endings, while those with short *a in their stressed syllable would have had a geminate or consonant cluster following it, unlike the single consonant of the *niqʿal*. Furthermore, the sound change seems to have been operative in all closed syllables, including those closed by a guttural or a geminate, but not in open syllables: thus, *naʾman > *neʾman > *nɛʾman* 'he proved faithful', *nattan > *nettan > *nittan* 'it was given', *naglā > *nigl̄å* 'it was revealed', but *nasōg > *nåsog̃* 'he turned back' and *namass > *nåmås* 'it melted (pause)' with preserved *a. We can therefore formulate a regular sound law: before a stressed, short *a in a word-final, singly closed syllable or a stressed, word-final *ā, unstressed *a in a closed syllable became *e; or formulaically, *a > *e / _CCáC#, _CCá.[13]

This sound change also seems to have affected the *niqʿal* participle, *niqṭāl* < *naqṭalum (cf. Amarna Canaanite *na-aq-ṣa-pu* 'angry (m.sg.)', EA 82:27′), which would violate the conditions we have just established. However, this participle can

[12] And seemingly that of the *niqʿal* participle, on which see below.

[13] While strong *niqʿal* perfects with a guttural first radical all have *nɛ-* in the prefix, there are a few III-wy forms like *naʿăśå* 'it was done'. This may indicate that the change in the strong *niqʿal* prefix did not affect words with a word-final vowel, but that these rather participated in the same sound law as the *qal* imperfect prefix, discussed below.

easily have been analogically adapted to the shape of the perfect, based on the model of the semantically very similar stative *qal*. Considering pairs like *kābed 'he was heavy' : *kābēd 'heavy (m.sg. participle)', the *niqqal* perfect *neqṭal could plausibly have given rise to the associated participle *neqṭāl. This analogical explanation seems preferable to a phonetic one, as it would be hard to explain why *naqṭāl shifted to *neqṭāl (attested in the Hexapla, see Brønno 1943: 107) while *maqṭāl remained unchanged until much later.

7.3.3 The *qal* imperfect prefix

As was already mentioned, the Barth–Ginsberg Law (Barth 1894b: 4–6) states that the prefix vowel of the *qal* imperfect was originally *a if the stem contained *u or *i, as in *yaqṭul- and *yaqṭil-, but *i if the stem contained *a, as in *yiqṭal-. There is some disagreement about when exactly this state of affairs came into effect (Hasselbach 2004b). For present purposes, it is sufficient to note that the Barth–Ginsberg Law certainly applied in Proto-Northwest-Semitic, as it is reflected in Ugaritic (Ginsberg 1939), Amarna Canaanite (Rainey 1978), Hebrew, and Syriac.[14]

Like the *a > *i* change in the *niqqal* perfect prefix discussed above, however, the change in Hebrew imperfect prefixes that should have *a according to the Barth–Ginsberg Law (e.g. *yaqṭul > *yiqṭol*) has been mentioned by many scholars, but a precise description is still lacking. Authors preceding Harviainen (1977) simply attributed it to the general tendency towards attenuation of unstressed *a, but as we have seen, this is not a single development. This change, then, must be described in its own right.

Phonetically, the sound change is similar to that in the *niqqal* perfect prefix. The main difference is that it was not operative before gutturals: the distribution of *i and *a is still governed by the Barth–Ginsberg Law in I-guttural verbs, with statives like *yeḥĕraḇ* 'it will be dry' reflecting *i and fientives like *yaḥărōš* 'he will plow' reflecting *a. As in the *niqqal*, though, *a became *e > *i before geminates, as in *yatten > *yitten* 'he will give'. Unlike the change in the *niqqal*, this change operated before any short vowel in the following syllable, not just *a, and also before the long, word-final vowel in III-wy imperfects like *yiḇnɛ* < *yabnē. Notably, *a was preserved in the *hiqqil* imperfect, as in *yaqṭil* < *yaqṭīl, which shows that this

[14] Kossmann & Suchard (forthcoming) argue that the Barth–Ginsberg Law is much older than this and should be reconstructed for the shared ancestor of Proto-Semitic and Proto-Berber.

sound change was conditioned by the weight of the following syllable, and that the strong verb had already analogically adopted *ī (originating in II-wy verbs) in this part of the paradigm: in other words, *yaqṭīl did not shift to *yiqṭīl because the long vowel occurred in a closed and therefore superheavy syllable. Thus, the sound law can be formulated as follows: unstressed, short *a in a closed syllable, preceding a stressed, heavy, but not superheavy syllable, shifted to *e, except before gutturals; or formulaically, *a > *e / _C[-guttural]C$\acute{\breve{V}}$C#, _C[-guttural]C$\acute{V}$#.

This sound change is shared by all Hebrew traditions, so it can be dated to Proto-Hebrew. Joüon & Muraoka (2009: 118, n. 3) cite Rainey (1996: II 35–36) for evidence that the change to *i is already attested in Amarna Canaanite, but in fact, Rainey states that this is not the case on pages 73–75. Forms like *yi-il$_5$-qé* 'he took' derive "from the adoption of Akkadian themes, either of the *iparras* or *iprus* type, to which the Canaanite consonantal person morphemes, *y-*, *t-*, and *Ø-*, were applied." (p. 75) The change of *a to *e in the imperfect prefix should therefore be dated between Proto-Canaanite and Proto-Hebrew.

7.3.4 *a > *i in *qaṭlum nouns

The interchange between stressed *a and unstressed *i in many *qaṭlum nouns was already noted by Brockelmann (1908: 147). The example he gives, *zɛ́ḇaḥ* < *zabḥ 'sacrifice' besides *ziḇḥi* 'my sacrifice', is not the most felicitous, however; Classical Arabic *ḏibḫun* 'sacrifice' makes it likely that this word goes back to *ḏibḫum, not *ḏabḫum, and that the *a in the unsuffixed form is due to Philippi's Law (see chapter 6).[15] Of the segolates that show this *a/*i interchange, those in table 7.4 can securely be reconstructed as *qaṭlum nouns based on cognates in other languages. These words all have *i* before suffixes, and, in the case of *mas* and *sapō*, in the plural. Thus, 'his grave' is *qiḇro*, 'bowls' is *sippim*, etc.

The *a > *i shift seems to be conditioned by the accent. Any attempt to formulate a true sound law, however, runs into difficulties, as this change is almost exclusively limited to this morphological class; thus, nouns from other patterns and verbs maintain *a in nearly identical position. *missim*, for instance, can be contrasted with *massåḏ* 'foundation', *masså* 'trial' and its plural *massoṯ*, *masseḵå* 'molten image', and yet other words with various vowels following *mass-*.

[15] Classical Arabic also has *ḏabḫun* 'slaughter', with *a*, but *ḏibḫun* is a better semantic match with the Hebrew.

Table 7.4: Unambiguous *qaṭlum nouns with *a/*i interchange

BH	meaning	cognates
bɛ́ṭɛn	'belly'	EA /baṭnu/, Arab. *baṭnun*
yɛ́ṯɛr	'cord'	Syr. *yaṯrā*, Gə. *watr*
mas	'forced labour'	EA /mass-/
sapō	'bowl'	Akk. /sappu/ and /šappu/
pɛ́rɛš	'gut contents'	JBA *partå*, Arab. *farṯun*, Akk. /paršu/
qɛ́ḇɛr	'grave'	Arab. *qabrun*, Akk. /qabrum/

Counterexamples can be found for any plausible conditioning of this supposed sound change.

Qimron & Sivan (1995: 30–31) accordingly dismiss the apparent interchange. According to them, this is a morphological development, not a phonological one. They cite many examples of words with the same meaning, but a different segolate noun pattern in different Semitic languages – like *ʾašpå* 'quiver', Ugaritic <uṯpt>, Akkadian /išpatu/ – or even within Tiberian Hebrew, like *bóśɛm* and *bɛ́śɛm*, both 'balsam, perfume'. Hebrew forms with *i* for reflexes of *a in other languages, then, are not the result of a sound change from *a > *i, but simply go back to a historical *i.

This explanation is plausible for some cases of Hebrew *i* corresponding with reflexes of *a in cognates, as in the correspondence of *ʿez* 'goat' to Classical Arabic *ʿanzun* cited by Bauer & Leander (1922: 194). For the words given in table 7.4, however, it is not very convincing. It requires Hebrew to have had two by-forms of all of these words, with *qabr and *qibr, for instance, existing side by side with no difference in meaning. Then, later, these two separate words were merged into one, suppletive paradigm, the form with *i always being selected for forms where the vowel was unstressed and that with *a always taking the stressed position. This does not seem very likely.

When combined with the fact that Philippi's Law applied to *qiṭlum nouns (see chapter 6), however, a simpler scenario is thinkable. In this scenario, the *qaṭlum nouns with *a/*i interchange were first shifted to *qiṭlum in a morphological change of the kind suggested by Qimron & Sivan. When stressed, their *i vowel was then affected by Philippi's Law, eventually resulting in *a; or if the shift was made after the first phases of Philippi's Law had already taken place, the *qaṭlum

nouns would have been adapted to the phonetically regular reflexes of *qiṭlum in use at the time. Thus, *qabr/*qabrō could have shifted to *qɛbr/*qebrō, based on phonetically regular *qiṭlum forms like *ṣɛdq/*ṣedqō '(his) righteousness'.

Alternatively, the change could have occurred at a relative late point in time, after the last stage of Philippi's Law (more accurately, Blau's Law, see chapter 6) had taken place and unsuffixed *qiṭlum nouns had become *qaṭl, merging with historical *qaṭlum nouns. *qiṭlum nouns that still preserved their *i (> *e) in suffixed forms would have provided a model for analogical introduction of *e to suffixed forms of original *qaṭlum nouns: *ṣadq 'righteousness' : *ṣedqō 'his righteousness' = *qabr 'grave' : *qebrō 'his grave'. This analogical account seems simpler than the one described immediately above, which postulates a lot of unmotivated morphological change, but both scenarios are possible. Either way, the *a/*i interchange in *qaṭlum nouns can be explained through non-phonological processes.

7.4 Conclusion

In the long prehistory of Biblical Hebrew, several separate changes of *a > *i took place. As the Secunda transcribes this vowel as ɛ in most words that had already undergone the change by that time, we are probably actually dealing with changes of *a > *e, with a later change of unstressed *e > *i* in Biblical Hebrew.[16] The following instances of *a > *e or *i can be distinguished:

1. *a followed by a geminate consonant and a short, stressed vowel assimilates in quality to that following vowel (based on Huehnergard 1992). Thus, the *piʿel* perfect *qaṭṭila > *qiṭṭila, *qaṭṭilu(m) adjectives > *qiṭṭilu(m) (and *qaṭṭulu(m) adjectives > *quṭṭulu(m)). The *i vowel was analogically extended to the rest of the paradigm and to the *hipʿil* perfect. This change is shared with Phoenician and Amarna Canaanite and therefore probably dates back to Proto-Canaanite.

2. *a in a closed syllable, followed by a stressed a-vowel in a word-final heavy syllable dissimilates to *e: *a > *e / _CCáC#, _CCā́#. Thus, the *nipʿal* perfect *naqṭal > *neqṭal. The *e was analogically extended to the other persons

[16] This change of *e > *i is also attested in Aramaic (Beyer 1984: 138–140) and is thus probably an effect of the Aramaic vernacular on the Hebrew reading tradition.

and numbers of the *nip̄ʿal* perfect, and to the participle. This sound change probably postdates the first apocope and possibly postdates tonic lengthening, (see chapter 4), as *maqṭalum > *maqṭāl nouns were unaffected. It was not operative in Amarna Canaanite and probably goes back to Proto-Hebrew, as it is attested in all Hebrew reading traditions and transcriptions.

3. *a in a closed syllable, followed by any stressed vowel in a word-final heavy syllable shifts to *e, except before gutturals: *a > *e /_C$^{[\text{-guttural}]}$C$\check{\acute{\text{V}}}$C#, _C$^{[\text{-guttural}]}$C$\acute{\check{\text{V}}}$#. Thus, the *qal* imperfect *yaqṭol > *yeqṭol. The *e vowel analogically spread to the second and third person plural and the second person feminine singular. This sound change must have operated somewhere in the same time frame as 2.

4. When *a or *i was deleted as the first of two unstressed vowels in open syllables, as in construct state plurals like *qaṭalē, it was replaced by a full vowel, the quality of which was determined by the surrounding consonants (Yuditsky 2010). The resulting vowel was *a if the preceding or following consonant was a guttural or before *r*, *l* or *n*, *i elsewhere; *i was also the result between *y and *l in *yil̲de* 'children (construct)'. This phonetic distribution was often disturbed by analogical spread of *a or *i from other parts of the paradigm. The sound change must have taken place after the elision of unstressed, non-pretonic short vowels in the third century CE.

5. Unstressed *a in a closed syllable dissimilates to *e or *i before following *å or accented *a or *ɛ, either in the following syllable or later in the word, except in certain conditions (based on Qimron & Sivan 1995). Thus, *maqṭål nouns shifted to *miqṭål, their construct state *maqṭal to *miqṭal, etc. This change does not take place before or after gutturals, before geminates, in reduplicated syllables, before clusters of a consonant and ʾ, or before clusters of any consonant and a nasal; thus *maʿrå̱b̲ 'west', *ʿak̲bår 'jerboa', *mattån 'gift', *dardar 'thistles', *malʾå̱k̲ 'messenger', *śalmå 'dress', etc., all remain unchanged. This sound change only took place in the Tiberian tradition and must therefore be very late. That it postdates the operation of Blau's Law (see chapter 6) is shown by its operation in words like *mirbaṣ* < *marbaṣ < *marbeṣ 'resting place (construct)', cf. the associated absolute state *marbeṣ*.

6. The apparent *a > *i shift in *qaṭlum nouns like *qɛ́b̲ɛr*, *qib̲r-* before suffixes, is not a phonological development. Rather, it is either the result of a mor-

phological shift of these words to a *qiṭlum pattern, or of analogy with the latter, once their absolute states had become *qaṭl, merging with original *qaṭlum nouns. In the former case, the development is nearly impossible to date; in the latter, it must postdate the operation of Blau's Law, and must therefore be dated later than the fourth century CE.

Only a few words contradict these rules: *šaḏmoṯ* 'terraces (construct)', *marṣépɛṯ* 'pavement', *marḥéšɛṯ* 'cooking pan', *maṭwɛ* 'yarn', *maswɛ* 'veil', and *zalʿåpå* 'irritation' should all have *i* instead of *a* in their first syllable. Given the large number of words that do follow the rules, however, the occurrence of a few exceptions, which may have received their attested vocalization through processes which can no longer be identified, is acceptable. Alternatively, the recent origin of the Law of Attenuation and the difficulty of identifying its phonetic conditioning may indicate that this is a case of lexical diffusion (see Introduction). Due to the previous cases of *a > *e, unstressed *a in closed syllables would have been somewhat rare, which may have triggered an irregularly spreading change to *e in the Tiberian tradition.

8 Word-final vowels

8.1 Introduction

The development of word-final short vowels in Hebrew has been the subject of much discussion. In some Semitic languages, original vowels in this position are regularly preserved. This is the case, for instance, in Classical Arabic, where we find word-final short vowels in such frequent forms as the third person masculine singular perfect, *qaṭala*, the imperfect of the same person, *yaqṭulu*, and the second person masculine singular independent pronoun, *ʾanta*. Other languages have undergone apocope, resulting in forms like Biblical Aramaic *qṭal*, *yiqṭul*, and *ʾant*. When we compare these forms to their Biblical Hebrew cognates, a problem arises: whereas *qåṭal* and *yiqṭol* have lost their word-final vowel, *ʾattå* appears to preserve it. No phonetic conditioning seems to govern the preservation of these vowels, and consequently, attempts to explain it have involved such problematic concepts as morphologically conditioned sound change or the reconstruction of a separate category of vowels that are somehow both long and short at the same time.

After a review of the literature, we will see that many of these cases of irregularly preserved short vowels have been adequately explained by rethinking reconstructions or recognizing the operation of morphological processes. As the development of word-final vowels in the pronominal system and the closely related perfect endings is still unexplained or debated, the greater part of this chapter will focus on reconstructing those forms and accounting for their Biblical Hebrew reflexes. In chapter 4, we found that the conditioning of tonic lengthening is most easily understood if we posit two separate rounds of apocope in the prehistory of Hebrew, regularly deleting whatever unstressed word-final short vowels were present at that time. This is not contradicted by the data presented in this chapter, and accordingly, it will be maintained as a working hypothesis. Occasionally, these two sound changes will be referred to as the first apocope, preceding the loss of

mimation, and the second apocope, postdating both the loss of mimation and tonic lengthening.

As we shall see, the closed classes of pronouns and verbal endings have undergone a fair amount of non-phonological change. Accordingly, I would like to remind the reader of the difference between analogy and contamination, explored in more detail in the Introduction to this work (section 1.1.2), and point out the conventions used here to indicate different kinds of phonological and morphological change: regular sound change will be marked by single angle brackets (e.g. $a > b$), analogical change will be marked by double angle brackets (e.g. $a >> b$), and contamination will be marked by arrows (e.g. $a \rightarrow b$).

8.2 Previous suggestions

8.2.1 Anceps vowels

Noting the irregular correspondences between long and short word-final vowels like those mentioned above, Brockelmann (1908: 74–75) proposes that in Proto-Semitic, unstressed word-final vowels were slightly shortened. He calls these vowels "anceps" (*anzeps*), using a term for a syllable that may be either long or short in poetic metre. These vowels, then, show both long and short reflexes in the different Semitic languages, reflecting their intermediate status in Proto-Semitic. To this phenomenon Brockelmann attributes the preservation of word-final *-å* in cases like *ʾattå* 'you (m.sg.)' and in the locative ending (*he locale*) as in *ḥúṣå* 'outside', or rather, the fact that this *-ā (in his reconstruction) did not participate in the Canaanite Shift > *-ō. This seems to contradict his statement elsewhere that only stressed *ā > *ō, for which see chapter 3. Brockelmann also sees the result of the anceps rule in the prepositions *ʾɛl* 'to' and *ʿal* 'on', which he derives from *ʾeli < *ʾilay and *ʿali < *ʿalay. The general notion of word-final unstressed long vowels being anceps is shared by Bergsträsser (1918: 115), who speculates about possible conditions under which the vowels were shortened, and by Bauer & Leander (1922: 231), who also note the alternation between short *i in the second person feminine perfect suffix *-ti > *-t* and long *ī in the same ending with personal suffixes attached, like *natantīhu > *nṯattíhu* 'you (f.sg.) gave it'.

The problem with this account is that it does not explain why some vowels stayed long and others became short. Unless conditions can be identified which

caused the shortening of word-final unstressed long vowels in some cases and not in others, the anceps hypothesis amounts to stating that the length of word-final vowels varied at random, which goes against the idea of phonetically conditioned sound change. Nor does it explain why the same word has a long final vowel in some languages and a short one in others: if the shortening was already Proto-Semitic, its effects should be identical in all the Semitic languages. Brockelmann's derivation of *ʾēl* and *ʿal*, finally, is incompatible with the usual development of diphthongs in Hebrew (see chapter 5). These forms can more easily be traced back to an alternation between short forms like *ʾila without suffixes and longer forms like *ʾilay- before suffixes, a distribution which is attested by many prepositions in Gəʿəz (e.g. *qədma* 'in front of' vs. *qədmeka* < *qidmayka 'in front of you (m.sg.)') and can therefore be reconstructed for Proto-West-Semitic. The poetic forms *ʾĕle* and *ʿăle*, as well as *ʿăḏe* 'until' from *ʿaḏ* 'idem', would then be the result of paradigm levelling, as would the Classical Arabic cognates of these words, *ʾilā* < *ʾilay and *ʿalā* < *ʿalay.[1]

8.2.2 Alternative explanations

The majority of the scholarship concerning the loss and preservation of word-final vowels has addressed the anceps hypothesis as described above. Two alternative explanations must be mentioned, however, both from the middle of the twentieth century; they differ on most points, but agree that the seemingly preserved word-final vowels are not the authentic, inherited forms.

Birkeland (1940: 12–17) believes that all anceps vowels were originally short. Like pretonic lengthening (see chapter 4), he sees the preservation of some of these vowels in Biblical Hebrew as the result of dialect borrowing. The relevant pronominal endings, the *he locale*, and the cohortative ending *-å* were borrowed into a dialect that had lost word-final short vowels from a dialect that preserved them; as the former dialect only possessed long vowels in *Auslaut*, these newly borrowed vowels were interpreted as such. Thus, for instance, *ʾátta 'you (m.sg.)'

[1] The Hebrew and Arabic forms do show the result of different prosody. In Hebrew, the prepositions seem to have been unstressed and proclitic, with the final diphthong developing as in the dual and plural construct state: *ʿalay > *ʿăle* like *yaday > *yḏe* 'hands (construct)' (Classical Arabic *yaday*). In Classical Arabic, they behave like the prosodically independent adverb *matay > *matā* 'when' (Hebrew *måṯay*). Dr. A. Al-Jallad informs me that in the spoken Arabic dialects, only short forms of *ʾil-, like *ʾilak* 'to you (m.sg.)', are attested, while the forms of *ʿal- are long, like *ʿalēk* 'on you (m.sg.)', as in Classical Arabic; this supports the reconstruction of a short form like *ʾila for the 'to' pronoun, at least.

was borrowed as *ʾáttā > ʾattå. Unfortunately, this account cannot explain the distribution of the anceps vowels. Why, for instance, was the second person masculine singular perfect *qaṭálta borrowed as *qaṭáltā > *qåṭáltå*, while the third person masculine *qaṭála > *qåṭal* did not preserve its final vowel? Birkeland's account does not have much explanatory power and is accordingly not very attractive.

The second of these alternative explanations, found in Paul Kahle's *The Cairo Geniza*, summarizes many years of research into non-Tiberian traditions of Biblical Hebrew. In the first edition of this workJ (Kahle 1947), the second person masculine singular ending *-ḵå* is discussed on pages 95–102. Kahle notes that another form of this suffix, reflecting *-ak rather than *-kā, is normal in the Second Column of the Hexapla (e.g. αμμαχ 'your people', Tiberian ʿammḵå), Jerome's Hebrew transcriptions (e.g. *ammach* 'idem'), liturgical texts with Palestinian vocalization (e.g. *bbetak* 'in your house', Tiberian *bḇeṭḵå*), Samaritan Hebrew (e.g. *ʿábdak* 'your servant', Tiberian ʿaḇdḵå), and possibly in Bible manuscripts with Palestinian vocalization. He concludes that *-ak is the authentic Hebrew form of this suffix, and that the Tiberian Masoretes artificially introduced *-ḵå* because they thought this was the more correct form, taking their inspiration from the imposition of a vocalization according to Classical Arabic on the originally non-Classical consonantal text of the Qurʾān. Similar introductions of word-final vowels took place in the perfect ending *-tå* and the third person feminine suffix *-hå*.

It seems doubtful that the Tiberian Masoretes would have changed their Hebrew based on an Islamic example. Additionally, Kahle's explanation does not account for the distribution of the originally short vowels. As in Birkeland's account, it is not clear why, for instance, *bētak 'your (m.sg.) house' was replaced by *bētakā based on Classical Arabic *baytaka*, but *bētek 'your (f.sg.) house' was not replaced by **bētekī based on Classical Arabic *baytiki*; or why *katabt 'you (m.sg.) wrote' was replaced by *katabtā like Classical Arabic *katabta*, but *katab 'he wrote' was not replaced by **katabā like Classical Arabic *kataba*. Another objection is provided by Brønno (1950), who shows that the Palestinian vocalization is not the precursor of the Tiberian one, as the latter accurately preserves more archaic linguistic features than the former in many cases. This reduces the need to see *-ḵå* as an artificial introduction that was not present in earlier stages of the tradition; it could simply be a variant form that was preserved in the Tiberian tradition, but lost in the Palestinian one.

Kahle refines the argument in the second edition of the book (1959: 171–179), incorporating the material from the Dead Sea Scrolls; this had been impossible for the first edition, as the discovery of the former roughly coincided with the publication of the latter. Taking the frequent spellings of the second person masculine singular suffix like -<kh> found in some of these texts into account, Kahle arrives at a different origin of the Tiberian suffix -*k̲å*. He still believes that the Arabic grammarians exerted influence on the Tiberian Masoretes, but he now also ascribes the Masoretic introduction of word-final vowels in some forms to their supposed find of some Qumran documents around the year 800 CE. In fact, such a find is reported in an early ninth-century letter from the Nestorian patriarch Timothy, paraphrased by Kahle.[2] If these documents were similar to the Dead Sea Scrolls found in the twentieth century, they would have contained plene spellings of word-final vowels in the relevant forms. The Tiberian Masoretes were ideologically inclined to value these documents highly, and accordingly, they adapted their reading tradition to reflect these plene spellings.

Although it is contingent on the orthography of unknown texts, this scenario is not very implausible. Still, it is safer to assume that -*k̲å* goes back to a variant form that was preserved in the Tiberian tradition in whatever way. Either alternative presents us with a new problem: given the existence of a Tiberian or Qumranic form going back to *-kā, how can we explain the origin of this form? In other words, Kahle's account does not resolve the anceps problem.

8.2.3 Anceps revisited

So far, then, neither the anceps hypothesis nor its alternatives have proved satisfactory. Cantineau (1937) rightly criticizes the anceps approach for its lack of specific conditions in which word-final short vowels were shortened. He notes that in Biblical and Targumic Aramaic, which show two reflexes of several pronominal suffixes, the conditioning factor is the length of the preceding vowel: the vowel of the suffix has the same length as that preceding it, e.g. *ʾăb̲úhi* 'his father' < *ʾabūhī, but *yd̲eh* 'his hand' < *yadihi. Citing similar examples from Arabic dialects, Cantineau reconstructs this as the original distribution, arriving at a system of quantitative vowel harmony in the personal suffixes. As Blau (1982) notes, however, Classical Arabic shows the exact opposite distribution in the case of the third person masculine singular suffix -*hŭ̆*, which is short after long vowels, but

[2] I thank Dr. C. Stadel for pointing this out to me.

long after short vowels. There is no reason to privilege one of these distributions over the other, so the original distribution of forms with a long vowel and those with a short one remains unclear.

Steiner (1979), in an article on the origin of the Mishnaic Hebrew second person masculine singular suffix *-ak̲* and its relation to Biblical Hebrew *-k̲å*, sees the preservation of the final vowel in the third person feminine singular suffix *-hå* as the result of a "conspiracy" (p. 171), in the linguistic sense of the word. He posits that the apocopation of word-final short vowels only took place in environments like *V̆CV: thus, for instance, *ʾimmaha > *ʾimmah > *ʾimmåh* 'her mother', but *ʾabīha > *ʾăb̲íhå* 'her father'. This sound law cannot be accepted, though, as it is clearly contradicted by the loss of word-final short vowels following a heavy syllable in many nominal and verbal forms, e.g. (*kalbum >) *kalbu > *kalb > *kélɛb̲* 'dog', *heqīma > *heqīm > *heqim* 'he erected', etc.

Blau (1982) politely disagrees with Steiner. Rather, he attributes the different forms of the third person feminine singular suffix to the elision of *h, which, in his opinion, only took place after short vowels:

> Accordingly, *mar'ehā* 'her sight' with long *e* preceding the *h* preserved the *h*, yet *lahā*, with short *a* preceding the *h*, has become *lā* (as in Num 32:42). Yet not only did the ending *-ā* mark feminine (*yaldā* being understood as 'girl', rather than 'her boy'), but, because of forms like *'ăb̲îhā*, etc., *h* was considered characteristic of 3fs and therefore again added: *lāh*. (p. 63)

This is an attractive explanation. Besides the distribution of *-åh* and *-hå*, it also explains the presence of *å* in the former form of this suffix, which cannot be the regular outcome of *-ah, as it should not have undergone tonic lengthening (see chapter 4). Additionally, the elision of *h in this environment is confirmed by the corresponding masculine suffix after *a, which becomes *-ahu > *-au > *-ō > *-o*, as in *qaṭalahu > *qṭålo*, but preserves its *h after long vowels.

Notwithstanding this useful analysis of the third person feminine singular suffix, Blau's article cannot be accepted as a whole. The author goes on to discuss the anceps character of word-final long vowels, which he defines a bit differently from earlier scholars; no explicit definition is given in Blau (1982), but he seems to have the same understanding of the term as in Blau (2010: 55), where anceps vowels are defined as "either long or short, depending on context". This differs from how the term is used by Brockelmann (1908), who means that phonologically long vowels in unstressed, word-final position were slightly shortened. Blau then

describes how paradigm pressure caused some of these vowels to be preserved, while others were lost; for example, the second person masculine singular perfect *qaṭaltă̆ > *qåṭåltå* preserved its final vowel so as not to merge with the feminine, *qaṭaltĭ̆ > *qåṭålt*. This is problematic, as it constitutes non-phonetic conditioning of sound change. It is questionable whether the avoidance of homophony is even an operative principle in language change (Sampson 2013). On page 65, Blau himself gives examples of Arabic dialects which have merged all the first and second person singular perfect forms (Tunis), or where the second person masculine singular has merged with the first person singular (Damascus) or the second person feminine singular (Morocco). This shows that the merger of these forms would not have been problematic enough to force speakers to block a sound change, even if they were able to.

At this point, we may mention Blau (1977), containing a note (pp. 29–30) that is not directly relevant to the discussion of pronominal forms which has dominated the debate over word-final vowels, but which does belong to this chapter in general. It concerns the origin of the cohortative ending *-å*, as in *ʾεšmrå* 'let me keep'. Blau sees two possible origins for the cohortative. First, it could continue an old subjunctive *ʾaqṭula, in which case its final *-a was preserved due to the frequent postposition of the precative particle *nå*[3]. For example, in *ʾašmora-nā 'oh, let me keep', *-nā would have formed a phonological unit with the preceding subjunctive verb. The subjunctive ending *-a was thus not word-final, and was not affected by apocope. After apocope had taken place, this form with preserved *-a was extended to other positions, based on analogies like *šmor-nā 'oh, keep' : *šmor 'keep' = *ʾašmora-nā 'oh, let me keep' : *ʾašmora > *ʾεšmrå* 'let me keep'. Alternatively, it could be a back formation based on the energic *ʾaqṭulana (in Blau's reconstruction), which was reanalyzed as a combination of the aforementioned precative particle *nå* and what must then be a first person modal form: *ʾašmorana 'let me keep' was then reanalyzed as *ʾašmora-nā, based on the occurrence of *-nā after other modal forms. This second account is problematic, as the energic should have lost its final *-a, rendering the reanalysis impossible (as *ʾašmoran would hardly have been mistaken for *ʾašmora-nā); or, if the reanalysis preceded the first apocope of word-final short vowels, the newly created *ʾaqṭula should have lost its *-a and regularly have developed to **ʾεqṭol*. The first option,

[3]The etymology of this particle is uncertain; for a recent overview of the possibilities, see Hartlieb (2011). We may tentatively reconstruct it as *nā, but note that this *ā must have arisen after the Canaanite Shift (see chapter 3).

however, seems plausible, especially given the semantic equivalence between the Hebrew cohortative and Amarna Canaanite subjunctive forms like *yaqṭula demonstrated by Moran (1960), supporting an origin of the former in the latter.

The investigation into word-final vowels in pronouns continues with Hasselbach (2004a). After a review of the previously cited literature, she attempts to derive all suffix forms (except the first person singular accusative *-nī) in Akkadian, Gəʿəz, Arabic, Hebrew and Aramaic from forms with short ultimate vowels. Rather than trying to explain everything phonologically, she sees most of the various forms as being the result of analogy or contamination. Many of these analogies are questionable; the individual cases will be discussed below, as a detailed critique would unduly lengthen this section. Hasselbach's suggestion that the length in the third person masculine singular suffix after long vowels *-hu* is due to contamination with the independent pronoun *hu* 'he', however, is a good one; again, arguments for accepting this proposal will be given below.

Most recently, Al-Jallad (2014) has provided some modifications to Hasselbach's account. He agrees with her that most of the pronouns should be reconstructed with an originally short vowel, but also takes issue with some of the proposed analogies. Besides an insightful treatment of the development of word-final vowels in Gəʿəz, he adduces evidence from Arabic which bears on Hebrew forms with word-final vowels like *ʾattå* 'you (m.sg.)'. Al-Jallad notes the existence in "many Levantine dialects" (p. 323) of two forms of the second person masculine singular pronoun, e.g. Bišmizzen *ʾint* besides *ʾinti*, Ḥōrān *ənt* besides *ənte*. Interestingly, the long forms of these pronouns show reflexes of *-ah in their final syllable. He concludes:

> Thus, in the case of Levantine Arabic, we can reconstruct two forms of the 2ms independent pronoun, a short form **inta*, which following apocope produces *ənt* and *int* in Ḥōrān and Bišmizzen, respectively, and **intah*, which goes into both as *ənte* and *inti*, respectively. The long form, with the final *h* preserved, is in fact attested in some contemporary West Arabian dialects.

The presence of a previously unexplained *-h at the end of independent pronouns is also noted by Arab grammarians, who see it as a pausal phenomenon, and it is epigraphically attested in the Jabal Usays inscription, where we find <ʾnh> for a topicalized 'I', presumably representing /ʾanah/. Al-Jallad then rightly notes that the long form of the second person masculine singular independent pronoun, *ʾantah, should regularly yield *ʾattå* in Biblical Hebrew. From there, the final -å

vowel (or one of its earlier forms, like *-ā) could have spread to the possessive suffix *-k̲å* and the perfect suffix *-tå*, based on analogy with the feminine: *ʾatt* 'you (f.sg.)' : 2f.sg.pf. *qåṭalt* = *ʾattå* 'you (m.sg.)' : 2m.sg.pf. *qåṭáltå*. The third person feminine plural imperfect ending, Biblical Hebrew *-nå*, also has two reflexes in the Levantine dialects, going back to both *-na and *-nah, and again, the *h* is preserved in some West Arabian dialects; accordingly, Al-Jallad proposes "h-closing" as the origin of the apparent anceps vowel in this ending, too.

The Arabic evidence for the existence of these forms with *-h is convincing, and the formal correspondence with Hebrew is unproblematic. One might still object that this solution merely changes the problem: whereas the traditional anceps hypothesis supposes the unconditioned alternation of forms with a long or short final vowel, we must now deal with the unconditioned presence of a word-final *-h. As Al-Jallad suggests, however, the forms with *-h may well have been especially used for topicalized pronouns. The existence of a separate series of pronouns used in topic or focus position is cross-linguistically common: for a well-known example, cf. Ancient Greek ἐγώγε vs. ἐγώ 'I', or, less well-known, Dutch *ikke* vs. *ik* 'idem'. The presence of h-closing on the second and third person feminine plural imperfect form *tiqṭólnå* < *taqṭulnah does not fit this explanation, but there, it can easily have originated in the associated third person feminine plural independent pronoun, *hénnå* < *hinnah. Thus, the reconstruction of a separate series of independent pronouns marked as topics solves a part of the anceps problem, as far as Hebrew is concerned.

8.2.4 Summary

The anceps hypothesis, namely that (some) word-final, unstressed, long vowels could be realized as short under certain conditions, was proposed to account for several different categories of unexpected word-final vowels in Hebrew. Of these, the cohortative ending *-å* has convincingly been explained by Blau (1977) as originating in the old subjunctive ending *-a, which was protected from apocopation by the enclitic precative particle *-nā. The locative ending *-å*, or *he locale*, has not featured prominently in the discussion since Birkeland (1940), but the discovery of Ugaritic, with its locative ending -<h>, has shown that the Hebrew form, too, must go back to *-ah; thus, for instance, Blau (2010: 269). This leaves us with the various forms of the independent and suffixed pronouns, many of which show seemingly irregular behaviour. Important contributions to an improved

understanding of the history of these forms were recently made by Hasselbach (2004a) and Al-Jallad (2014). In the following section, then, we will review their suggestions in more detail, see how they relate to other sound changes discussed in this work, and attempt to explain those pronominal forms that remain without an adequate explanation.

8.3 Word-final vowels on pronominal suffixes and verbal endings

In the previous section, we concluded that the only seemingly irregular reflexes of originally word-final short vowels in Hebrew are to be found in the pronominal suffixes and some closely associated verbal endings. In this section, we will examine these endings person by person and attempt to reconstruct them and describe their development into Biblical Hebrew. The reconstruction will mainly be based on a comparison with Akkadian, Classical Arabic, various Aramaic dialects, and Gəʿəz, as other Semitic languages are either written in an unvocalized script, or, in the case of the modern languages, have had much more time to undergo various secondary processes, obscuring the original forms. Of course, data from other languages will be adduced when relevant and useful.

Since the question whether Akkadian lost all word-final short vowels is hotly debated, as is the resulting question whether attested word-final vowels in Akkadian are long or short, these vowels will be marked with both a macron and a breve in this section, e.g. /ā̆/. This simply indicates that the length is uncertain and should not be taken as a statement that these vowels were in any way anceps, both long and short, or anything similar.

8.3.1 First person singular

An overview of the forms of the first person singular endings are given in table 8.1.

It should be noted that while the Arabic independent pronoun is spelled <ʾnʾ> and customarily transcribed as *ʾanā*, evidence from poetic metre shows that the second vowel was actually short, as in /ʾana/ (Brockelmann 1908: 297). Like the Gəʿəz form, then, it goes back to *ʾana, although forms with a long final vowel are attested in various Arabic dialects. We also find the reflex of a long vowel in Biblical Aramaic *ʾănå* and Syriac *ʾenā*. Contrary to what these forms may suggest

Table 8.1: First person singular pronominal and perfect endings

form	BH	Akk.	Arab.	BA	Gəʿəz
indep.	*ʾånoḵi, ʾănі*	/anākŭ̆/	*ʾanā*	*ʾănå*	*ʾana*
gen. suff.	*-í, -áy*	/-ĭ̆/, /-yă̆/	*-ī, -ya*	*-í, -i, -áy*	*-ya*
acc. suff.	*-ni*	/-nĭ̆/	*-nī*	*-ni*	*-ni*
pf. suff.	*-ti*	/-kŭ̆/	*-tu*	*-éṯ*	*-ku*

at first glance, they cannot go back to a form like *ʾanā; like Hebrew, Aramaic did not originally stress word-final vowels (see chapter 4), and unlike Hebrew, it did not later shift the stress to these vowels, so *ʾanā should have yielded Biblical Aramaic **ʾánå, Syriac **ʾan, like *ʾabī 'my father' > Biblical Aramaic *ʾáḇi*, Syriac *ʾāḇ*, or the third person feminine plural perfect *qaṭalā > Biblical Aramaic *qṭálå*, Syriac *qṭal*. Rather, they reflect *ʾanáh, the presumably topicalized form with h-closing also attested in the Arabic of the Jabal Usays inscription (Al-Jallad 2014), as Aramaic stressed word-final CVCVC sequences on the ultimate syllable (Birkeland 1940: 3). The second vowel of the short Biblical Hebrew form *ʾănі*, on the other hand, must be secondary, given its quality. We can therefore reconstruct *ʾana, with short *a in both syllables, as the original short form of this pronoun, while an h-closed form *ʾanah is attested in some forms of Arabic and Aramaic.

The long form of the first person singular independent pronoun, Biblical Hebrew *ʾånoḵi*, is usually seen as the origin of the *-i* in many parts of the paradigm in Hebrew and broader Canaanite. Hasselbach (2004a: 14), too, posits the traditional development of *ʾanākū (based on Akkadian /anākŭ̆/; again, the length of the final vowel is uncertain) > *ʾanōkū (Canaanite Shift, see chapter 3) > *ʾanōkī with dissimilation of *ū > *ī due to the preceding *ō > *ʾånoḵi*. This derivation is problematic, however. Other Canaanite languages attest the absence of *-ī in this pronoun, while it is present in other parts of the paradigm, meaning that the independent pronoun cannot possibly be the source of the *-ī vowel. Thus, in the Moabite of the Mesha stele, 'I' is <ʾnk>, without a final *yoḏ* and thus probably representing /ʾanōk/, while the verbal ending is -<ty>, representing /-tī/; similarly, in the Punic of *Poenulus*, we find the independent pronoun <anec(h)>, while the verbal ending -<thi> is attested on <corathi> /qarōtī/ 'I called'. The Amarna Canaanite form *a-nu-ki* (EA 287:6′, 9′) does not tell us anything about the length of the final vowel, and while it seems to showcase the traditionally assumed

dissimilation, the final vowel could also be the result of contamination, as will presently be proposed for the Biblical Hebrew form. The long form of this pronoun should then be reconstructed as *ʾanāku, with a short vowel; if the final vowel were long, all forms of Canaanite should have preserved it.

Unusually (for West Semitic), the first person singular has multiple different forms of the pronominal suffix. The accusative suffix, used after verbs, shows regular reflexes of *-nī everywhere and is unproblematic. The genitive suffix, used after nouns and prepositions, has two separate forms in many languages. Based on the distribution in Akkadian and Arabic, it seems that the form *-ya was used following a long vowel or diphthong, while *-ī replaced the case vowel in words ending in a consonant: cf. Classical Arabic *yad-ī* 'my hand' from *yad-un*, but *yad-ā-ya* 'my hands (dual)' from *yad-ā-ni*. Gəʿəz has almost completely generalized *-ya*, while Syriac uniformly shows *-(y)* as the reflex of *-ī; Biblical Aramaic still shows reflexes of both forms, as can be seen from the different position of the stress in *ʾáḇi* 'my father' < *ʾab-ī vs. *yḏi* 'my hand' < *yad-i-ya. Similarly, the position of the stress shows that the Biblical Hebrew form of the suffix, *-í*, comes from *-íya > *-éy (loss of word-final short vowels) > *-ī́.[4] The suffix on plural nouns is unproblematically derived from *-áyya > *-áyy > *-áy*. Interestingly, the possessive suffix is always stressed in Hebrew: this may be contrasted with the behaviour of the independent pronouns, which have the pausal forms *ʾᵒ́ni* and *ʾånóḵi*. Based on these pausal forms, the direct precursors of the Hebrew pronouns should be reconstructed as *ʾánī and *ʾanṓkī, respectively. This suggests that they acquired their unstressed final *-ī due to contamination with that form of the possessive suffix (thus Bauer & Leander 1922: 248), which was later lost in Hebrew, or through contamination with the accusative suffix *-nī, or both.

As Al-Jallad (2014) shows, the Gəʿəz form of the perfect suffix, *-ku*, can go back to *-ku as well as *-kū. The reconstruction with a short *-u is confirmed by Classical Arabic *-tu* and the lost short vowel in Biblical Aramaic *-eṯ*, with an anaptyctic *-e-* (Aristar 1987: 179); thus, we can reconstruct the ending as *-tu for Proto-Northwest-Semitic. Like the *-i* in the independent personal pronouns, then, the final vowel in the Hebrew perfect suffix *-ti* must be due to contamination with one or both of the other suffixes, *-ī or *-nī. Again, some varieties of Canaanite showcase perfect suffix forms from *-tī but no forms of the long independent

[4]Contrary to the rules given in chapter 5, the triphthong *-iya (> *-eya) did not contract to *-ā; or rather, it presumably did, but the suffix was analogically restored based on forms where *-ya had been preserved following a diphthong or long vowel.

Table 8.2: First person plural pronominal and perfect forms

form	BH	Akk.	Arab.	BA	Gəʿəz
indep.	*ʾănáḥnu, náḥnu*	/nīnŭ̆/	*naḥnu*	*ʾănáḥnå*	*nəḥna*
suff.	*-nu*	/-nĭ̆/	*-nā*	*-nå*	*-na*
pf. suff.	*-nu*	/-nŭ̆/	*-nā*	*-nå*	*-na*

pronoun from *ʾanōkī, so the final vowel of the former cannot be derived from that of the latter. This leads us to reconstruct the following development of the first person singular forms:

- independent pronoun (short form): *ʾana → *ʾanī (contamination with *-(n)ī) > *ʾăni*
- independent pronoun (long form): *ʾanāku > *ʾanōku → *ʾanōkī (contamination with *-(n)ī) > *ʾånóḵi → *ʾånoḵi* (contamination with *ʾăni*)
- accusative suffix: *-nī > *-ni*
- genitive suffix: *-iya > *-í* (after singular nouns), *-ayya > *-áy* (after plural nouns)
- perfect ending: *-tu → *-tī (contamination with *-(n)ī) > *-ti*

8.3.2 First person plural

An overview of the first person plural forms can be found in table 8.2.

Based on the Akkadian, Gəʿəz, and Arabic forms, the Proto-Semitic form of the independent pronoun can be reconstructed as *niḥnŭ̆. The short final vowel in Arabic makes *niḥnu the more likely option. Gəʿəz is the only language to have *-na*, with a short *-a*, as the final syllable in this pronoun, corresponding to the suffixes in that language. This may well be due to contamination with the first person singular independent pronoun, *ʾana*. *-na* then spread to the suffixes through contamination.

The Central Semitic languages all share the innovation of having *a instead of *i in the initial syllable of the independent pronoun, which can accordingly be reconstructed for Proto-Central-Semitic as *naḥnu (Huehnergard 2005a). This

form was preserved in Classical Arabic. Hebrew (except in a few cases) and Biblical Aramaic both added *ʾă-* to the pronoun due to contamination with the short form of the first person singular, Hebrew *ʾănî* / Aramaic *ʾănå*. Some other Aramaic dialects show very different forms of the independent pronoun, which have undergone heavy secondary restructuring, like Syriac *ḥnan*.

Both Hebrew and Aramaic show a different outcome of the second syllable than the expected *-nu > **-*n*. Interestingly, as in Gəʿəz, this second syllable is identical to the pronominal and perfect suffixes in each language, *-nu* in Hebrew and *-nå* in Aramaic. It seems most plausible that this form of the independent pronoun is due to contamination with these suffixes. The explanation given by Hasselbach (2004a: 14), namely that the long *-ū in Hebrew is due to contamination with the second and third person plural ending *-ū, seems unlikely; as a second person suffix, this second form only occurs in the imperfect, *tiqṭlu*, yet the first person plural, *niqṭol*, does not have *-ū here. As the first person plural imperfect, *niqṭol*, and the second person plural perfect, *qṭaltɛm* (m.) / *-tɛn* (f.), both do not end in *-ū, one can hardly say that "the *-ū* was reanalysed as a plural marker for all persons." Additionally, Hasselbach's explanation does not account for the long *-ā reflected in both Aramaic and Arabic; it is unlikely that it originated in the first person singular independent pronoun, as she suggests for Arabic (p. 13), since we have seen that this should be reconstructed as *ʾana, not *ʾanā. Moreover, it seems strange that the first person singular independent pronoun *ʾanā* would contaminate the first person plural suffixes (*-nā*) but not the associated independent pronoun (*naḥnu*).

Only Akkadian shows a difference between the pronominal suffix and the perfect ending (stative ending in Akkadian). It is not clear whether this preserves an original distinction; alternatively, the pronominal suffix /-nĭ̆/ could have taken its vowel from the first syllable of the independent pronoun /nīnŭ̆/ through contamination. Either way, we see that Gəʿəz has most likely extended the final syllable of the independent pronoun to the suffixes through contamination, possibly masking an original distinction between these forms. At first glance, it seems appealing to connect Hebrew *-nu* with the Akkadian stative ending /-nŭ̆/, but given the correspondence between Aramaic and Arabic, the suffixes should probably both be reconstructed as *-nā for Proto-Central-Semitic and Proto-Northwest-Semitic. Arabic and Aramaic then maintained this form of the suffixes unchanged, while in Canaanite (compare Amarna Canaanite *ru-šu-nu* 'our head', EA 264:5), the Canaanite Shift changed *-nā > *-nō and, in this unstressed, non-word-initial syllable, > *-nū (see chapter 3).

Unexpectedly, the Hebrew suffixes are always joined to their base by a historically long, stressed vowel, as in *qṭåĺ̊nu*; the length of the connecting vowel in the imperfect, as in *yiqṭlénu*, and in nouns, as in *laḥménu* 'our food', is shown by the failure of the accent to be moved forward to the long ultimate syllable, which would have resulted in ***yiqṭɔ̀lnú* and ***laḥmnú*, respectively. The length of this vowel is probably not due to tonic lengthening, as this did not generally operate in syllables preceding long vowels, cf. *qaṭálū > *qåṭlu*, *yaqṭólū > *yiqṭlu*, both without lengthening (see chapter 4). Instead, the suffixes may have been formed through analogy with III-wy verbs and nouns, where the long connecting vowel is regular: *ʿaśayánū > *ʿaśā́nū > *ʿåśǻ̊nu* 'he made us', *yaʿśeyénū > *yaʿśḗnū > *yaʿăśénu* 'he will make us', *ʿōśeyénū > *ʿōśḗnū > *ʿośénu* 'our maker' (see chapter 5 for the contraction of triphthongs). The forms with long connecting vowels could then be extended through analogies like *ʿåśúnu* 'they made us' : *ʿåśǻ̊nu* 'he made us' = *qṭålúnu* : *qṭåĺ̊nu*. This analogy may have been motivated by the desire to match the position of the accent in the suffixes to that in the independent pronoun, *ʾănáḥnu*, where it always fell on the penultimate syllable, based on the fact that other persons also stressed the pronoun and the suffixes on the same syllable. Admittedly, this is not a very compelling motivation. Especially the different behavior of this suffix when attached to the second and third person masculine singular perfect (*qṭaltå̊́nu*, *qṭåĺ̊nu*) as compared to that of the first person singular suffix (*qṭaltáni*, *qṭåláni*) is puzzling.

Tentatively accepting this explanation for the connecting vowel, then, we may describe the development of the first person forms as follows:

- independent pronoun: *niḥnu >> *naḥnu (morphological change of unknown origin) → *naḥnā (contamination with *-nā) > *naḥnū (Canaanite Shift) → *ʾanaḥnū (contamination with *ʾanī; later than pretonic lengthening; *naḥnū also rarely preserved) > *ʾănáḥnu*

- pronominal suffix and personal ending: both *-nā (in West or Central Semitic, if not Proto-Semitic) > *-nū (Canaanite Shift) > *-nu*; connecting vowel of pronominal suffix analogically introduced from III-wy roots

8.3.3 Second person singular

For an overview of the forms, see table 8.3.

Table 8.3: Second person singular pronominal and perfect forms

form	BH	Akk.	Arab.	BA	Gəʿəz
masculine					
indep.	*ʾattå*	/attă̆/	*ʾanta*	*ʾant*	*ʾanta*
suff.	*-k̲ǻ*	/-kă̆/	*-ka*	*-(a)k̲*	*-ka*
pf. suff.	*-tå*	/-tă̆/	*-ta*	*-t(å)*	*-ka*
feminine					
indep.	*ʾatt*	/attĭ̆/	*ʾanti*	–	*ʾanti*
suff.	*-k̲*	/-kĭ̆/	*-ki*	–	*-ki*
pf. suff.	*-t*	/-tĭ̆/	*-ti*	*-ti*	*-ki*

Of the masculine forms of the independent pronoun listed in table 8.3, all but Hebrew reflect *ʾanta, with a short final vowel. Biblical Aramaic also attests a form spelled as <ʾnth>, presumably reflecting /ʾattā/, but read as *ʾant*. Occasionally, Hebrew also shows the reflex of the form with an original short final vowel, *ʾatt*, as in Num 11:15; a similar form αϑ also occurs once in the Secunda, which normally has αϑϑα (Brønno 1943: 190–191), and there is a possible attestation of <ʾt> in Epigraphic Hebrew (Renz & Röllig 2003: 4). As was mentioned above, Al-Jallad (2014) shows that two forms of this pronoun, *ʾanta and *ʾantah, should be reconstructed based on Arabic dialects. It seems, then, that Biblical Hebrew overwhelmingly attest the reflex of *ʾantah > *ʾattā, while the other languages predominantly show reflexes of *ʾanta. The origin of the final vowel of *ʾattå* in *-ah explains why it did not participate in the Canaanite Shift: it did not become *-ā until after that sound law was operative.

For the masculine pronominal suffix, Arabic, Aramaic, and Gəʿəz all show forms that must reflect *-ka. In fact, the reflex of this form is also widely attested in non-Tiberian traditions of Biblical Hebrew, as Kahle (1947, 1959) discusses; the clearest examples are found in the Secunda, which has -αχ after nouns and prepositions and -εχ after verbs (only imperfect forms are attested; Brønno 1943: 195 ff.). The short form of the suffix is still preserved in Biblical Hebrew as the pausal form with prepositions, like *låk̲* 'to you (m.sg.)' < *laka. Additionally, this suffix is almost exclusively spelled as -<k> in Biblical Hebrew, versus expected **-<kh> if the final vowel were long; this may be contrasted with the spelling of *ʾattå*, virtually always <ʾth>. Combined, these facts show that the original Hebrew

form goes back to *-ka, like its cognates. As Al-Jallad suggests, the Biblical Hebrew vocalized form *-k̲å* is best seen as an analogical extension of the ending found on the independent pronoun: *ʾatt 'you (f.sg.)' : 2f.sg. suffix *-k = *ʾattā 'you (m.sg.)' : 2m.sg. suffix *-kā. This late addition of *-ā, which originated in *-ah, also explains why the vowel preceding the suffix did not undergo tonic lengthening, contrary to vowels preceding the locative ending *-ah. As *ġa^{d}z^{d}zátah develops to *ġa^{d}z^{d}zā́tah > *ʿazzǻt̲å* 'to Gaza', we should expect forms like *yadékah > *yādḗkah > ***yåd̲ḗk̲å* 'your (m.sg.) hand' in context, and not just *in pausa*, if the *-ah had been present on the second person masculine singular suffix from an early date. Instead, *-ah > *-ā was attached to the suffix only after the operation of tonic lengthening (and after the fixing of the consonantal text of the Hebrew Bible, as the lack of indication of a final vowel shows), giving us the regular development of *yadáka > *yadák (first apocope) >> *yādékā (analogical extension of *-ā only after tonic lengthening) > *yåd̲k̲å*. The pronunciation with *-ā is reflected by the frequent spelling of this suffix as -<kh> in the Dead Sea Scrolls (Qimron 1986a: 58–59), indicating that the analogical extension of this vowel was already underway in some dialects or reading traditions by the time those documents were written.

The history of the masculine perfect ending is similar to that of the pronominal suffix. Based on cognate evidence, as well as the usual Hebrew spelling as -<t>, it should be reconstructed as *-ta. Spellings with -<th> are attested, however, and the Secunda shows both -ϑ and -ϑα for this ending, with no clear conditioning (Brønno 1943: 19–21). Together with the occurrence of the longer ending *-tå* in Biblical Aramaic, this may indicate that *-ā was extended to the perfect ending in more dialects or reading traditions than it was to the pronominal suffix, or perhaps at an earlier date. This is unsurprising, as the occurrence of *t in both the independent pronoun and the perfect ending would have made them more similar to begin with, and thus better candidates for analogy.

The Hebrew, Arabic and Gəʿəz forms of the feminine independent pronoun can all be unproblematically reconstructed as *ʾanti; the preservation of gemination in word-final position is unique to this word in Hebrew, but can be understood as analogical to the masculine, *ʾattå*, based on the other alternations of masculine *-å* : feminine zero in the second person singular. The Biblical Aramaic form is not attested, but Syriac *ʾatt* <ʾnty> must go back to *ʾantī, with a long final vowel; that the Biblical Aramaic form would have been derived from the same form, yielding something like *ʾánti*, is made likely by the attested perfect ending, *-ti* <

*-tī. A similar Biblical Hebrew form is reflected by the consonantal spelling <ʾty>, always read *ʾatt* (Joüon & Muraoka 2009: 110). These forms, which are similar to those found in many Arabic dialects, are probably the result of analogy with the second person feminine singular jussive and imperative ending *-ī; this has often been noted, as by Blau (1982: 64) and Hasselbach (2004a: 16), and the posited analogy is unproblematic: *taqṭul (2m.sg. jussive) : *ant 'you (m.sg.)' (after the loss of *-a) = *taqṭulī (2f.sg. jussive) : *ʾantī 'you (f.sg.)'. As this analogy depends on the loss of *-a in the masculine pronoun, it leads to a falsifiable prediction: the second person feminine should not be marked by *-ī outside of the prefix conjugation in Semitic languages that have preserved short word-final vowels. To my knowledge, this prediction holds.[5]

The other feminine singular forms are to be explained in the same way. They should be reconstructed as *-ki and *-ti; the forms with *-ī reflected by the rare Biblical Hebrew forms *-ḵi* and *-ti* (sometimes only in the consonantal spelling and read without the final vowel) and by the Aramaic forms are the result of the same analogy that affected the independent pronoun. The Hebrew form of the perfect ending before suffixes, *-tí-* < *-tī-, must also go back to such an analogically extended form.

In Hebrew, then, these second person singular forms developed as follows:

- masculine independent pronoun: *ʾanta >> *ʾantah (h-closing) > *ʾattå*
- masculine pronominal suffix: *-ka > *-k >> *-kā (analogy with the independent pronoun) > *-ḵå*
- masculine perfect ending: *-ta > *-t >> *-tā (analogy with the independent pronoun) > *-tå*
- feminine independent pronoun: *ʾanti > *ʾatt > *ʾat (word-final degemination) >> *ʾatt* (analogy with the masculine)
- feminine pronominal suffix: *-ki > *-k > *-ḵ*
- feminine perfect ending: *-ti > *-t > *-t* (preservation without epenthetic vowel in forms like perfect *qåṭalt* instead of **qåṭélɛṯ* due to analogy with masculine)

[5]Samaritan Hebrew seemingly provides a counterexample, as the independent pronouns occur there as masculine *åttå* and feminine *åtti* (Ben-Ḥayyim 2000: 225). Like Tiberian Hebrew, however, Samaritan Hebrew does not regularly preserve word-final short vowels. The analogical introduction of *-ī could have taken place before *ʾattā < *ʾattah had completely replaced *ʾatt < *ʾatta.

Table 8.4: Second person plural pronominal and perfect forms

form	BH	Akk.	Arab.	BA	Gəʿəz
masculine					
indep.	*ʾattɛm*	/attunŭ/	*ʾantum*	*ʾantun*	*ʾantəmu*
suff.	*-k̲ɛ́m*	/-kunŭ/	*-kum*	*-k̲óm*	*-kəmu*
pf. suff.	*-tɛ́m*	/-tunŭ/	*-tum*	*-tún*	*-kəmu*
feminine					
indep.	*ʾattén(å)*	/attină/	*ʾantunna*	–	*ʾantən*
suff.	*-k̲ɛ́n*	/-kină/	*-kunna*	–	*-kən*
pf. suff.	*-tɛ́n*	/-tină/	*-tunna*	*-tén*	*-kən*
ipf. suff.	*-nå*	/-ă/	*-na*	*-án*	*-ā*

8.3.4 Second person plural

An overview of the most important second person plural forms is given in table 8.4.

In the second (and third, see below) person plural, we find different ways of marking the gender in the various languages. In Hebrew and Arabic, the masculine is marked by *-m*, versus *-n*(-) in the feminine. Akkadian, on the other hand, has /n/ in both genders, but has different vowels preceding it, /u/ for the masculine and /i/ for the feminine. This distinction is also found in later dialects of Aramaic, cf. Syriac *ʾatton* 'you (m.pl.)' vs. *ʾatten* 'you (f.pl.)'. The simplest explanation is that both gender markers originally occurred in the same forms, the masculine being marked by *-um and the feminine by *-in, with the various languages levelling either the vowel or the nasal through contamination. This original double marking is still preserved in the Biblical Aramaic suffix form *-k̲óm*, with *-o-* < *u and *-m*, vs. the perfect ending *-tén*, with *-e-* < *i and *-n*.

Of the languages given in table 8.4, only Biblical Aramaic has significant variation in the masculine forms. The independent pronoun *ʾantun* and the perfect ending *-tun* must come from *(ʾan)-tūn(V̆), a form which is not found elsewhere in Semitic or even in Aramaic. These are secondary formations, analogically formed after the imperfect: 2m.sg. imperfect *taqṭul : 2m.pl. imperfect *taqṭulūn = 2m.sg. perfect *qaṭalt : 2m.pl. perfect *qaṭaltūn. A similar analogical form is found in the Biblical Hebrew form of the perfect ending before suffixes, *-tú-* < *-tū-, which was formed by analogies like the following: 3m.sg. perfect + 1sg. suffix *qaṭalanī :

3m.pl. perfect + 1sg. suffix *qaṭalūnī = 2m.sg. perfect + 1sg. suffix *qaṭaltanī : 2m.pl. perfect + 1sg. suffix *qaṭaltūnī.

The original Proto-Aramaic form of the independent pronoun should be reconstructed as *ʾantum(V̆), whence Syriac *ʾatton* with *-n* due to contamination with the feminine. Based on Aramaic and Arabic, then, we may reconstruct *ʾantum as the original form. In Gəʿəz, we find an additonal *-u*, presumably due to contamination with the second person plural jussive, imperfect and imperative ending, *-u* < *-ū. A similar form is attested in the Arabic perfect ending before suffixes, as in *katabtumūhu* 'you (m.pl.) wrote it' (Blau 1982: 66). Blau concludes from this that "the original form of *-tum*, *-kum*, *-hum* in Classical Arabic was, no doubt, *-tumū*, *-kumū*, *-humū*" (ibid.), attributing the loss of *-ū in the unsuffixed forms to irregular sound change. He also sees evidence for *-ū in the form of the suffix before word-initial consonant clusters, e.g. in *katabtumu l-kitāba* 'you (m.pl.) wrote the book', with shortening of *ū > *u* in a closed syllable; but this *u* might also simply be an epenthetic vowel that was coloured by the preceding labial. As for the irregular loss of *-ū in these suffixes, it is preferable to reconstruct two forms of the suffix, one ending in *-um and one ending in *-umū due to the already mentioned contamination. While it is possible that the same contamination took place separately in Arabic and Gəʿəz, we might also push the development back to Proto-West-Semitic and reconstruct *ʾantumū as a byform of *ʾantum. The same goes for the other second person masculine plural forms, which also have the added *-u* in Gəʿəz. Considering the Akkadian forms in /-ŭ̆/, this contamination might even have taken place in Proto-Semitic. The forms ending in *-um should be reconstructed as the more original forms, however. The Biblical Hebrew forms, with the stress on the word-final, closed syllable both in context and *in pausa*, cannot regularly be derived from either form of this suffix. Since they have the same vowel as the feminine forms, they have probably adopted ɛ through contamination with the latter. The alternate masculine forms with a final vowel like <ʾtmh>, found in the Dead Sea Scrolls (Qimron 1986a: 58, 62), are secondary (p. 64); they seem to be continued in the Samaritan Hebrew forms like *attimma* (Ben-Ḥayyim 2000: 225).

As Gəʿəz preserved truly word-final vowels (Al-Jallad 2014), the feminine forms *ʾantən* and *-kən* can only derive from *ʾantin or *ʾantun and *-kin or *-kun, respectively. Based on the evidence from Akkadian and Aramaic, where *u marks the masculine and *i marks the feminine, we can then reconstruct these pronominal forms as *ʾantin and *-kin, as well as a perfect ending *-tin > Biblical Aramaic

-tén, which has become *-kən* in Gəʿəz due to contamination. The final vowel in the Akkadian forms was presumably taken from the second person plural verbal ending /-ā/ or adopted from the third person feminine plural suffix /-šinăˇ/, which, in turn, took it from the associated verbal ending. As the second person plural does not distinguish gender in historical Akkadian, it is more plausible that the contamination took place in the third person. In Arabic, too, the effects of contamination are evident: not only has the originally masculine *-u-* been extended to the feminine, but we also find an additional *-na*. Given its absence in most other languages, this was probably introduced from the second person feminine plural imperfect ending; this is part of a broader spread of *-na* as a marker of the feminine plural in Arabic, cf. the third person feminine plural perfect *qaṭalna* for older *qaṭalā.

This leaves us with the Biblical Hebrew feminine forms. The independent pronoun is very rare and its vocalization varies in different manuscripts (Joüon & Muraoka 2009: 110). The suffixes, however, are more common. Contrary to our reconstruction so far, they cannot be the regular reflexes of *-kin and *-tin. The fact that they are stressed, in context as well as *in pausa*, shows that another, originally word-final syllable has been lost (as Hebrew fixed the stress on the originally penultimate syllable, see chapter 4). The occurrence of *sḡol* in this position is unusual. In chapter 6, we found a number of words with a very similar ɛ, where it was the reflex of stressed *i before word-final geminate coronals in polysyllabic words, e.g. *bar$^{\text{d}}$zíllum > *barzílll > *barzɛl* ‘iron’. The second person feminine plural suffixes, then, appear to go back to *-kínnV̆ and *-tínnV̆; based on the parallel forms in Arabic, we may identify the additional syllable as coming from the feminine plural imperfect ending *-na, giving us *-kinna and *-tinna for the pronominal suffix and perfect ending, respectively. The ɛ, which is regular in these forms, then spread to the masculine through contamination.

Leaving the presence of *-å* on the feminine imperfect ending for the section on the third person plural, we may thus summarize the development of the second person plural suffixes:

- masculine independent pronoun: *ˀantum → ˀattɛm* (contamination with the feminine)

- masculine pronominal suffix: *-kum → -k̲ɛ́m* (contamination with the feminine)

Table 8.5: Third person singular pronominal forms

form	BH	Akk.	Arab.	BA	Gəʿəz
masculine					
indep.	*hu*	/šŭ/	*huwa*	*hu*	*wəʾətu*
suff.	*-o*, *-hu*, *-w*	/-šŭ/	*-hŭ*, *-hĭ*	*-eh*, *-hi*	*-u*, *-o*, *-hu*
feminine					
indep.	*hi*	/šĭ/	*hiya*	*hi*	*yəʾəti*
suff.	*-åh*, *-hå*	/-šă/, /-šĭ/	*-hā*	*-ah*	*-ā*, *-hā*

- masculine perfect ending: *-tum → *-tɛ́m* (contamination with the feminine); before suffixes >> *-tū- (analogy with the third person) > *-tú-*
- feminine independent pronoun: *ʾantin, Biblical Hebrew form textually uncertain
- feminine pronominal suffix: *-kin → *-kinna (contamination with imperfect ending) > *-k̲ɛ́n*
- feminine perfect ending: *-tin → *-tinna (contamination with imperfect ending) > *-tɛ́n*

8.3.5 Third person singular

Table 8.5 lists the most important forms of the third person singular pronouns. As the third person perfect endings are quite different from the pronominal suffixes and cause no particular problems for reconstruction, they are not given.

In Biblical Hebrew and some forms of Aramaic,[6] the independent pronouns are spelled with a word-final *ʾǻlɛp̄*, as in Biblical Hebrew <hwʾ> (masculine) and <hyʾ> (feminine). This is presumably to be identified with the pronounced ʾ in the Gəʿəz forms, which are otherwise hard to reconcile with their cognates,[7] and

[6]Biblical Aramaic uses the same spellings as Biblical Hebrew, but this may be due to shared spelling conventions (H. Gzella, personal communication), as the roughly contemporary Imperial Aramaic spellings are <hw> (m.) and <hy> (f.). In Old Aramaic, both pronouns are spelled <hʾ>, without a medial *mater lectionis* but with a final *ʾǻlɛp̄* (Gzella 2015: 115).

[7]Formally, we may connect the feminine *yəʾəti* with the Akkadian accusative independent pronoun /šiātĭ/, also reflected in Ugaritic (<hyt>); a similar use of original oblique forms in non-oblique functions is found in Phoenician (Gzella 2013b: 186–187). The long /ā/ in the second

that found in the Ancient South Arabian forms like Sabaic <h(w)ʾ> (masculine) and <h(y)ʾ> (feminine). The word-final *-a* in Arabic must come from *-a; as in the second person plural, the Hebrew of the Dead Sea Scrolls attests alternate forms with word-final vowels, <hwʾh> and <hyʾh>, but Qimron (1986a: 64) judges these to be secondary (more recently, strong doubts about the original status of the word-final vowels in these forms have been expressed by Gzella forthcoming b). The correspondence of West Semitic *h- and Akkadian /š-/ matches Proto-Semitic *s-, giving us the reconstructions *sŭʾa (masculine) and *sĭʾa. The length of the vowel in the first syllable is somewhat controversial. Traditionally, the pronouns have been reconstructed with a long vowel, as by Brockelmann (1908: 303) and most other scholars. On the other hand, Hasselbach, Al-Jallad, and some others follow Huehnergard (e.g. 2004) in reconstructing a short vowel in the first syllable, based on the perceived difficulty from deriving the Arabic and Ethiosemitic forms from reconstructions with a long vowel (J. Huehnergard, personal communication). In Hebrew, Aramaic, and Akkadian, the pronouns would then have developed from *huʾa, *hiʾa (Akkadian *suʾa, *siʾa) > *huʾ, *hiʾ (*suʾ, *siʾ) > *hū, *hī (*sū > /šū/, *sī > /šī/), while the glottal stop turned into a glide in Arabic (and Ugaritic, which has <hw> and <hy>): *huʾa, *hiʾa > *huwa*, *hiya*. In chapter 5, however, it was argued that the pre-Hebrew change of *u and *i to *o and *e, respectively, preceded the first loss of word-final vowels, as can be seen from (*yabniyu >) *yabniyi > *yabneye > *yabnē > *yiḇnɛ* 'he will build' and other III-wy imperfect forms. The regular outcome of *huʾa and *hiʾa in Hebrew would therefore be *hoʾa > *hoʾ > *hō > **ho* and *heʾa > *heʾ > *hē > **he*, respectively. The actually attested forms can only be attained by supposing an earlier, ad hoc loss of *-a in these pronouns. On the other hand, *hūʾa and *hīʾa, with a long vowel, regularly yield *hu* and *hi* in Hebrew and Aramaic. These reconstructions with long vowels necessitate that Arabic, in turn, must have undergone an ad hoc change, but this is necessary anyway, as the development of *ʾ > *w*, *y* is irregular in Classical Arabic; normally, *ʾ is simply preserved intervocalically, as in *miʾatum

syllable of the Akkadian word is difficult to reconcile with the ə found there in Gəʿəz; considering the nominative form of the same pronoun, which will be reconstructed below as Proto-Semitic *sīʾa, perhaps we should reconstruct the oblique as *sīʾatī. The development into Gəʿəz would then have been from Proto-West-Semitic *hīʾatī > *īʾatī > *yəʾəti*, with breaking of *ī > *yə* (Voigt 1987b). The change of *-a- > ə remains unexplained; Voigt compares it to the similar development in *miʾat- > *məʾət* 'one hundred', but this Gəʿəz form may also go back to *miʾt-, cf. Ugaritic <mit> /miʾt-/. The masculine, deriving from *(h)ūʾatū, would then be an analogical form, based on the feminine, with reanalysis of the word-final *-ī as marking the feminine and consequent replacement by *-ū in the masculine.

> *mi›atun* ‘hundred’. Instead of an ad hoc change of *hu›a > *huwa* and *hi›a > *hiya*, then, we may suppose the irregular loss of *› in these pronouns, with subsequent breaking of the long vowels into short vowels and glides in this now immediately prevocalic position: *hū›a > *hūa > *huwa* and *hī›a > *hīa > *hiya*. For the Gə‹əz forms, see note 7. In conclusion, the preferable reconstruction is that with a long vowel: Proto-Semitic *sū›a > Proto-West-Semitic *hū›a and PS *sī›a > PWS *hī›a.

The different forms of the pronominal suffixes are conditioned by the shape of the preceding word. In Arabic, the masculine forms with -*ĭ* are used after *-i-* and *-ay-*, as in ‹*alayhi* ‘on him’, and the forms with -*ŭ* elsewhere; the length of the vowel, which is not usually indicated in the script or in transcription, is opposite to that of the preceding vowel and short if a consonant precedes (Fischer 2002: 126).[8] In Biblical Hebrew, *-o* (and occasionally *-w*) and *-åh* are found after originally short vowels; or rather, the original suffix combined with the preceding short vowel, resulting in these forms. *-hu* and *-hå* are found in other environments, i.e. after heavy syllables, as Steiner (1979) and Blau (1982) note. Hasselbach (2004a: 4) states that “[i]n Hebrew imperfect forms the connecting vowel /ē/ before pronominal suffixes of the 3ms [as in *yiqṭléhu*] can only be derived from original short **i*”, but there are other options; given the historical length of the linking vowel (demonstrated by its retention of the stress in context), it more likely originated in the III-wy verbs and spread to the strong verb through analogy (Brockelmann 1908: 291). Resulting from a contracted triphthong *-aWe(-hū) > *-ē(-hū) (see chapter 5), this historically long vowel takes the corresponding form of the third person singular suffixes. In Biblical Aramaic, *-hi* similarly attaches to words ending in a historically long vowel, like ›*ăḇúhi* < *›abúhī ‘his father’ (the corresponding feminine suffix is not attested), and in Gə‹əz, too, *-hu* and *-hā* are used after historically long vowels. As was discussed above, this distribution led Cantineau (1937) to reconstruct a system of quantitative harmony for these suffixes, with the suffix having a long vowel after long vowels and a short vowel after short vowels, but the presence of the opposite system in Classical Arabic makes this reconstruction uncertain. Additionally, it is unclear whether all the allomorphy attested in the various languages must be due to a difference of vowel

[8] Fischer formulates this as the vowel being short after closed syllables and long after open syllables, but his examples show that a distinction between heavy and light syllables, respectively, is meant. Cf. *sāriqu-hū* ‘his thief (nom.)’ and *sāriqi-hī* ‘idem (gen.)’ vs. *sāriqū-hu* ‘his thieves (nom.)’ and *sāriqī-hi* ‘idem (acc./gen.)’.

length in the suffixes: besides Arabic, only Aramaic, with *-eh* < *-i-hV̆ and *-hi* < *-hī, clearly attests this difference. In the other languages, the allomorphy may be due to the conditioned elision of *h, which only took place after short vowels; this is how Blau (1982: 63) explains the difference in the feminine forms, and the same explanation could hold for the masculine. The 'short' Hebrew form would then have developed from *(yad)-a-hū > *-aū > *-ō > *(yå̱d)-o* 'his (hand)', with *h being maintained in other positions as in *(pī)-hū > *(pí)-hu* 'his (mouth)'.

We cannot simply reconstruct these suffixes as *-hū and *-hā, though. For one, the reflex of *-hu with short *-u is clearly attested in Arabic. More seriously, the Biblical Hebrew form *-hå* cannot come from *-hā, as this form should have undergone the Canaanite Shift. Like the other cases of 'anceps vowels', this seemingly irregular reflex may be the result of contamination or analogy.

Hasselbach (2004a: 17) makes an interesting suggestion that explains the occurrence of both long and short vowels in these suffixes. Noting the similarity between the independent and long suffixed forms in Hebrew and Akkadian, she reconstructs the suffixes as originally having a short vowel, the forms with a long vowel arising due to contamination with the independent pronoun. Thus, in Hebrew, *-hu → *-hū due to contamination with the independent pronoun *hū < *hūʾa; in Akkadian, *-šu → *-šū due to contamination with independent *šū < *sūʾa. In a note on page 17, she connects the invariable shortness of the vowel in the Arabic form of the suffix with the lack of a long vowel in the independent pronoun, *huwa*; as we have seen, forms with a long vowel do in fact occur in Arabic, but the contamination could have taken place at a time when the independent pronoun still had a long vowel, resulting in *-hu → *-hū due to contamination with *hū(ʾ)a. In her grammar of Sargonic Akkadian (2005), Hasselbach convincingly shows that in that language, at least, this contamination has taken place in the accusative pronominal suffixes (which are distinguished from the genitive suffixes in Akkadian). Whereas the genitive suffixes are spelled *-su* (masculine) and *-sa* (feminine), the accusative suffixes are *-su*$_4$ (masculine) and *-si* (feminine), as in *dar-a-mu-su*$_4$ /tarʾamūsu/ 'she loved him', *a-la-ga-si-ma* /ʾalaqqaḥsīma/ 'I will take her' (pp. 155–156; the phonological interpretation is Hasselbach's). That this is due to contamination with the independent pronouns *su*$_4$ /sū/ 'he' and *sī (attested in later dialects of Akkadian) seems clear. Hasselbach believes that the difference in spelling between *-su* 'his' and *-su*$_4$ 'him' does not necessarily reflect a difference in pronunciation, in which case this would simply be a scribal convention, but it seems more plausible that it does indicate a different vowel length, presumably

between /-su/ (spelled *-su*) and /-sū/ (spelled *-su*$_4$). This would parallel the case of the feminine accusative suffix *-si*, where the pronunciation must have been affected by contamination.

Given the occurrence of both long and short forms of these suffixes in Aramaic, Arabic, and Akkadian, then, the contamination that gave rise to some forms with long vowels may already have taken place in Proto-Semitic, in which case we should reconstruct both *-su and *-sū for the masculine suffix. Alternatively, the contamination may have taken place separately in the different languages, in which case Proto-Semitic would only have had the short form, *-su. Either way, it seems likely that an ancestor of Hebrew had both *-hu and *-hū at some point. Perhaps, then, it was the length of the vowel in the suffix that conditioned the elision of *h, not the length of the preceding vowel; this would explain the occasional cases of h-elision after historically long vowels, as in *ʾabīhu > *ʾabīu > *ʾåḇiw* 'his father' (besides *ʾåḇíhu*), *pīhu > *pīu > *piw* 'his mouth' (besides *píhu*). If this is the case, then the suffixes must have been redistributed based on the structure of the preceding syllable, with the short forms predominating after light syllables and the long forms elsewhere. Elision also originally took place in the feminine suffix: modifying the account given by Blau (1982) to reconstruct a short vowel in the suffix, the development may be represented as *(yad)-aha > *(yad)-ā > *yåḏåh*, with word-final *-h* reintroduced from *-hå* with unelided *h.[9] The existence of *-ha with a short vowel is confirmed by the Biblical Aramaic form of the suffix, *-ah*, which must come from *-aha. Whereas the variation in vowel length in the masculine is due to contamination with the independent pronoun *hūʾa, this cannot be the case for the feminine, as the feminine independent pronoun, *hīʾa, is not marked by an a-vowel; consequently, contamination should have yielded a suffix like **-*hi*, similar to the Akkadian feminine accusative suffix /-šī/ discussed above. Rather, the alternation was probably established by analogy with that found in the masculine; taking *-hā as the original form of the suffix, as this is the only form reflected in Classical Arabic, the analogy can be formalized as *-hū : *-hu = *-hā : *-ha. Later, a similar analogy worked in reverse to restore the *ā in the long form of the suffix after the Canaanite Shift had ceased operating: *-hu : *-hū = *-ha : *-hā.

[9]The *h* was not reintroduced in the masculine, because this could not be done without altering the consonantal text. In the feminine, however, the Masoretes merely had to add a *mappiq*, indicating the consonantal status of the word-final -<h>.

The development of the third person singular pronominal forms may then be summarized:

- masculine independent pronoun: *hūʾa > *hūʾ > *hū > *hu*
- masculine pronominal suffix: *-hu > *-u (elision of *h before a short, word-final vowel) > *-w*, or *-o* when contracted with a preceding *-a-; contamination with *hūʾa created an alternate form, *-hū > *-hu*.
- feminine independent pronoun: *hīʾa > *hīʾ > *hī > *hi*
- feminine pronominal suffix: *-hā, presumably > *-hō (Canaanite Shift) but >> *-hā afterwards (analogy with the masculine) > *-hå*; an earlier analogy with the masculine created an alternate form, *-ha > *-ā (elision of *h before a short, word-final vowel and contraction with preceding *-a- at some point after the Canaanite Shift) > *-å → *-åh* (contamination with *-hå*)

8.3.6 Third person plural

The most important third person plural forms are given in table 8.6. Gəʿəz also has the independent pronouns *wəʾətomu* (masculine) and *wəʾəton* (feminine), which are obvious analogical creations based on the third person masculine singular *wəʾətu*, the final *-u* having been reinterpreted as a pronominal suffix. Various forms of the independent masculine pronoun are attested in Biblical Aramaic, viz. *himmo*, *himmon*, and *ʾinnun*. Like the feminine *ʾinnin* and the Syriac forms, masculine *hennon* and feminine *hennen*, these are secondary, with various verbal endings added to the original pronominal base still reflected in Old Aramaic <hm>.

Many of the attested third person plural forms look like the second person plural forms discussed above. Based on those forms, we may reconstruct the independent pronouns as Proto-Semitic *sum (masculine) and *sin (feminine), which became *hum and *hin in Proto-West-Semitic. The suffixes seem to have had the same forms as the independent pronouns (as in Akkadian), *-sum (masculine) and *-sin (feminine). As the attested forms show considerable variation in the different languages, let us examine how they can be derived from these reconstructions.

Akkadian has maintained the difference in vocalism, with /-u-/ marking the masculine and /-i-/ marking the feminine, as in the second person. The originally feminine *-n has been extended to the masculine through contamination, while the final vowels are identical to the third person plural stative endings, masculine

Table 8.6: Third person plural pronominal and perfect forms

form	BH	Akk.	Arab.	BA	Gəʿəz
masculine					
indep.	*hém(må)*	/šunŭ̆/	*hum*	(various)	*ʾəmuntu*
suff.	*-m*, *-hɛ́m*	/-šunŭ̆/	*-hum*, *-him*	*-hóm*, *-hón*	*-(h)omu*
feminine					
indep.	*hénnå*	/šină̆/	*hunna*	*ʾinnin*	*ʾəmāntu*
suff.	*-n*, *-hɛ́n*	/-šină̆/	*-hunna*	*-hén*	*-(h)on*
ipf. suff.	*-nå*	/-ă̆/	*-na*	*-ā́n*	*-ā*

/-ŭ̆/ < *-ū and feminine /-ă̆/ < *-ā; this last ending has also been extended to the prefix conjugation of the verb in Akkadian, which may have contributed to the spread of these vowels to the pronominal forms through contamination.

In Arabic, the masculine forms have largely remained unchanged. The masculine suffix shows the same assimilation of *u > *i* that we have already seen in the third person masculine singular suffix, *-hi*, after *i* and *y*. The feminine forms have taken on the *u* vowel of the masculine and added the feminine plural imperfect ending, *-na*; both of these changes also occurred in the second person feminine plural.

The secondary nature of the Biblical Aramaic independent pronouns has already been noted. In the suffixes, the masculine has adopted the originally feminine *-n*, although the original form in *-m* is also still attested.

The Gəʿəz independent pronouns have accrued a lot of secondary material. Both genders end in *-ntu*, a deictic element that is also found in the long form of the near demonstrative, *zəntu* 'this', besides short *zə* 'idem'. This morpheme is preceded by *ʾəmu-* and *ʾəmā-*, the regular outcomes of *humū or *himū and *humā or *himā, respectively. It seems that the *m of the masculine has spread to the feminine, and that, as in Akkadian, the verbal endings *-ū and *-ā were added to the original pronominal base. As *i and *u merge into ə in this position, we cannot be sure whether the pronouns retained their original vowel or underwent some kind of contamination. In the suffixes, we see that the masculine has added the verbal *-ū, while the feminine has not, as in the second person plural. Finally, the seemingly irregular reflex of *u in the suffixes *-(h)omu* and *-(h)on* has convincingly been explained by Huehnergard (2005b) as resulting from analogy with the singular. Using different examples, the analogy is based on the regular

forms like *qatalahā > *qatalā* 'he killed her', *qatalūhā > *qataluhā* 'they (m.) killed her', and *qatalahun > *qatalon* 'he killed them (f.)'; the analogical form of the plural suffixes after historically long vowels is, predictably, that as in *qataluhon* 'they (m.) killed them (f.)'.

This leaves us with Hebrew. As in the second person plural, the masculine forms have largely been contaminated by the originally feminine vocalism. The masculine independent pronoun has two forms, *hem* and *hémmå*, whereas only *hénnå* is attested in the feminine. As no source for the additional *-må* in the masculine is apparent, the long masculine form has probably been created through analogy with the feminine. This suggests that there was a short form of the feminine independent pronoun, too, although this is unattested. The analogy would then have been **hen* : *hénnå* = *hem* : *hémmå*. *hénnå*, in turn, can be reconstructed as *hin which has been extended with the verbal ending *-na, as in Arabic; the preservation of the word-final vowel can be attributed to h-closing (Al-Jallad 2014): *hinnah > *hénnå*. The fact that the long masculine form *hémmå* is less frequently used as a demonstrative (as in *håhémmå* 'those (m.pl.)') than the short form (as in *håhem*) supports the possibility that h-closing served to create topicalized byforms of independent pronouns, as the demonstrative usage would call for the non-topicalized form (Joüon & Muraoka 2009: 111). Note that the short masculine form, *hem*, could go back to either *him, with *i due to contamination with the feminine *hin, or *himma, analogically created after the extended feminine *hinna; in the latter case, the longer masculine form *hémmå* < *himmah may have been created as an h-closed byform of *himma.

Besides *hémmå* and *hénnå*, the feminine plural imperfect ending *-nå* also preserves a word-final vowel. This is regular if we reconstruct this ending as *-nah, in which case the h-closing, presumably a feature of the independent pronouns, spread to this form through contamination with the independent feminine pronoun *hinnah. This sequence of events is supported by the frequent defective spelling of the verbal ending as -<n>, contrary to the consistent spelling of the independent pronoun as <hnh>, a situation which may be compared to the second person masculine singular (suffixes usually -<t> and -<k>, independent pronoun almost always <ʾth>).

The feminine suffix, which is similar to that of the second person plural, may be reconstructed as *-hinna, deriving from original *-hin with *-na added through contamination with either the imperfect ending or the independent pronoun (which, in turn, had taken it from the verbal ending), or both. As in the second

person plural, the vowel of the masculine suffix has been contaminated by that of the feminine, where the invariably stressed *ɛ́* is the regular outcome of *i in this position. When preceded by a vowel, the *h of these suffixes was elided,[10] resulting in vowel contraction. In Suchard (forthcoming), I attribute the preservation of the vowel preceding *h, rather than that following it, to the openness of the syllable; the third person masculine singular perfect with one of these suffixes, for instance, would then have developed like *qaṭalahumu > *qaṭalamu > *qṭålåm*. As we have seen, however, there is no reason to reconstruct these suffixes as *-humu and *-hina; rather, the feminine should be reconstructed as *-hinna (in Hebrew, from earlier *-hin) and, presumably, the masculine as *-himma. It seems, then, that syllables ending in a geminate consonant counted as open for the operation of this elision rule, since the vowel following the *h was preserved in closed syllables (as in the *hipʿil* participle of the strong verb, *mihaqṭīl- > *maqṭīl- > *maqṭil*), while the preceding vowel was preserved if the *h stood in an open syllable (as in the *hipʿil* participle of hollow verbs, *mihaqīm- > *miqīm- > *meqim*). That geminates behave differently than clusters of two different consonants is somewhat unexpected, but not unheard of; Philippi's Law, too, only operated before two different consonants, while leaving vowels preceding a geminate unaffected (see chapter 6). The development of these suffixes should therefore be reconstructed like *qaṭalahimma > *qaṭalamma > *qṭålåm*. The outcome of this vowel contraction seems to have been a short vowel, as can be seen from forms where it is unstressed, like *ʾăḵåláṭam* 'it consumed them'. The development of *a > *å* seen in the suffix *-åm* is then due to the assimilation of accented *a > *å* before *m* (Blau 1983). The occurrence of *å* in the feminine suffix *-ån* can be explained as arising from contamination or analogy with the masculine.

Finally, the third person plural suffixes have a few rare byforms. The most important of these is the masculine *-mo*, *-mu*, characteristic of archaic and archaizing poetry. With Christian (1953: 40), it seems best to equate this with the old third person dual suffix *-humā, reflected in Classical Arabic as *-humā*. The rounded vowels in the Hebrew forms are then due to the Canaanite Shift. It is true that the usage of *-mo* in Biblical Hebrew is not at all restricted to semantically dual antecedents, but it may well be that the form's obsolescence in the spoken

[10]The suffix was analogically restored in forms like *låhɛm* 'to them (m.pl.)', *båhɛm* 'in them (m.pl.)', and *kåhɛm* 'like them (m.pl.)', based on analogies like *ʿălek̲ɛm* 'on you (m.pl.) : *låk̲ɛm* 'to you (m.pl.)' = *ʿălehɛm* 'on them (m.pl.)' : *låhɛm* 'to them (m.pl.)'. The regular form is represented by *båm* 'in them (m.pl.)'. In *ʿălehɛm* < *ʿalayhimma, the *h was not originally postvocalic and therefore regularly preserved.

language caused authors to reinterpret the form as simply being an archaic byform of the masculine plural suffix, giving rise to historically incorrect usage with plural antecedents.[11] This would not be the only case of dual morphology being extended to the plural, as can be seen from the plural construct ending *-e* < the original dual construct ending *-ay. The occasional occurrence of the third person feminine plural suffix as *-ắnå* or *-énå*, on the other hand, is best explained as the result of contamination of the regular endings with the imperfect ending *-nå* and the independent pronoun *hénnå*.

In summary, the third person plural forms developed as follows:

- masculine independent pronoun: *hum → *him or *himma (contamination with feminine) > *hem*; h-closing of *himma or analogy with the feminine created the longer form *himmah > *hémmå*
- masculine suffix: *-hum → *-himma (contamination with feminine) > *-hem after consonants → *-hém* (contamination with feminine); after vowels, *-himma contracted to *-mma > *-m*; preceding *-a- was attached to the suffix, yielding *-amma > *-am > *-ắm* (assimilatory rounding before *m*)
- feminine independent pronoun: *hin → *hinna (contamination with imperfect ending) >> *hinnah (h-closing) > *hénnå*
- feminine suffix: *-hin → *-hinna (contamination with independent pronoun) > *-hén*; after vowels, *-hinna contracted to *-nna > *-n*; in forms with preceding *-a-, analogy with the masculine created *-ắn*
- feminine imperfect ending: *-na → *-nah (contamination with independent pronoun) > *-nå*
- old dual suffix: *-humā > *-mo* and *-mu*, reanalyzed as a plural suffix

8.4 Conclusion

We have seen that word-final, unstressed short vowels were regularly lost in an earlier stage of Hebrew, whereas long vowels were preserved. No intermediate anceps category is needed for Proto-Semitic or any ancestor of Hebrew. Apparent cases of

[11] Cf. such pseudo-archaic English creations as *thou maketh*; speakers know that the *-eth* ending is archaic, but have forgotten that it originally marked the third person singular, not the second.

Table 8.7: The pronouns and perfect endings of Proto-Northwest-Semitic

person	independent	suffixed	perfect ending
3m.sg.	*hūʾa	*-hu	*-a
3f.sg.	*hīʾa	*-hā	*-at
2m.sg.	*ʾanta	*-ka	*-ta
2f.sg.	*ʾanti	*-ki	*-ti
1sg.	*ʾana, *ʾanāku	*-ī, *-ya, *-nī	*-tu
3m.pl.	*hum	*-hum	*-ū
3f.pl.	*hin	*-hin	*-ā
2m.pl.	*ʾantum	*-kum	*-tum
2f.pl.	*ʾantin	*-kin	*-tin
1pl.	*naḥnu or *naḥnā	*-nā	*-nā

preserved word-final short vowels should either be reconstructed differently or are the result of morphological change, be it analogy or contamination.

Based on the reconstructions arrived at above, the paradigm of the Proto-Northwest-Semitic personal pronouns and perfect endings may be given as in table 8.7. The third person perfect endings have not been discussed in this chapter, as their reconstruction is unproblematic, but they are listed in the table for the sake of completeness. Independent pronouns ending in a vowel could undergo h-closing, a morphological process which added a *-h to form a topicalized independent pronoun (only attested for pronouns ending in *-a).

It is remarkable how much this paradigm looks like those we could reconstruct for Proto-Central-Semitic, Proto-West-Semitic, or even Proto-Semitic, especially when this apparent stability is contrasted with the great diversity of forms we find in the actually attested languages. This effect is an artefact of the methodology used. To illustrate this point, let us consider the case of the third person masculine singular suffix. Hebrew, Aramaic, Arabic, and Akkadian all attest a variant of that suffix with a long vowel, *-hū in the first three languages and *-sū in Akkadian. Yet we cannot reconstruct *-sū as the sole Proto-Semitic form, because the reflexes of *-su are also widely attested. There is a plausible way to derive *-sū (and *-hū) from *-su (and *-hu), namely contamination with the independent pronoun, while there is no apparent mechanism that would derive *-su from *-sū; accordingly, we should reconstruct *-su as the older form. Nevertheless, that does not exclude the possibility that this contamination already took place in Proto-Semitic. Byforms

like *-su and *-sū or *ʾantum (reflected in Aramaic and Arabic) and *ʾantumū (reflected in Akkadian and Gəʿəz) could have existed side by side in different dialects of Proto-Semitic, or even within the same dialect. The reconstructions given in table 8.7, then, represent the reflexes of the oldest surviving forms of these morphemes, but that does not entail that their various byforms were not already present in some proto-language.

9 A concise historical morphology of Biblical Hebrew

We have considered the most important sound changes from Proto-Northwest-Semitic to Biblical Hebrew. This chapter reviews the consequences of these developments for the historical morphology of the inflected word classes of Biblical Hebrew: pronouns, nouns and adjectives, numerals, and verbs. The Proto-Northwest-Semitic reconstruction and the attested Biblical Hebrew reflex of most of these forms is given in chapter 2. This chapter, then, mainly focuses on how the Biblical Hebrew paradigms may be derived from their Proto-Northwest-Semitic reconstructions based on the sound laws arrived at in the previous chapters. Frequent reference is made to the chapters discussing individual sound changes.

9.1 Pronouns

The personal pronouns, both independent and suffixed, are discussed in detail in chapter 8.

The masculine near demonstrative pronoun *zɛ* derives from the old genitive *ḏī: word-final stressed *-ī > *-ē and word-final *-ē > *-ɛ̄. The associated nominative *ḏū regularly yields the rare relative pronoun *zu* and the accusative *ḏā developed to the common gender demonstrative *zo* due to the Canaanite Shift. The plural *ʾéllɛ* is difficult to reconstruct, with different Semitic languages showing irreconcilable forms. The Hebrew form seems to go back to *ʾillay: the unstressed diphthong contracted to *ē and then participated in the shift to *-ɛ in word-final position.

As the animate interrogative pronoun *mi* does not show the same shift as *ḏī > *zɛ*, it should not be reconstructed with word-final *-ī, but as *mīya. The inanimate interrogative pronoun *må* (normally *ma-* with gemination of the following consonant) goes back to *mah.

9.2 Nouns and adjectives

9.2.1 Roots with one or two radicals

Synchronically, *pɛ* ‘mouth’ has only one radical. Both the absolute state and the construct state *pi*, also used before suffixes, derive from *pī, originally the construct state genitive. This was generalized to the absolute state due to the isolated nature of the regular reflex of the absolute, *pVm. In the absolute state, stressed word-final *-ī shifted to *-ē and further to *-ɛ̄.

ben ‘son’, *šem* ‘name’, *šeṯ* ‘bottom’ and **meṯ* ‘man’ (only attested in the plural) should be reconstructed as biradical *qṭum nouns without a vowel between the first and second radical (Testen 1985). The loss of mimation and the case vowel in the singular was probably analogous to their deletion in all other nominals. In the unsuffixed singular, an epenthetic vowel *e was inserted to break up the consonant cluster. The lack of an original vowel can still be seen before suffixes and in the plural, as in *bni* ‘my son’, *šmo* ‘his name’, *mṯim* ‘men’; *ben* forms the irregular plural *bånim* < *banīma and *šem* has extended the singular stem to the plural, *šemoṯ*.

Nouns with a short vowel between their first and second radical undergo tonic and pretonic lengthening, e.g. *yadum > *yåḏ* ‘hand’, *yadayma > *yåḏáyim* ‘hands’. *śayum > *śɛ* ‘sheep’ shows triphthong contraction and the subsequent development of word-final *-ē > *-ɛ̄. No unambiguous *quṭum nouns are attested. The irregular nouns *ʾåḇ* ‘father’, *ʾåḥ* ‘brother’, and *ḥåm* ‘father-in-law’ extend their stem with *-i* in the construct state and before suffixes, originally a lengthened genitive case vowel. The plural *ʾaḥim* ‘brothers’ goes back to *ʾaḫ̆ḫ̆īma with a different stem than the singular; before *qǻmɛṣ* in the suffix, the *paṯaḥ* regularly assimilates to *sḡol*, as in *ʾaḥåw > ʾɛḥåw* ‘his brothers’.

Nouns with *ī and *ū retain their original vowel, while those with *ā change it to *ō > *o* due to the Canaanite Shift.

Some feminine biradical nouns have incorporated a third radical in the plural. *dɛ́lɛṯ* ‘door’ was reanalyzed as a segolate, giving rise to the plural *dlåṯoṯ*; *ʾåmå* ‘maidservant’ has a third radical *h in the plural, *ʾămåhoṯ*. The feminine nouns *ʾåḥoṯ* ‘sister’ and *ḥåmoṯ* ‘mother-in-law’ were originally formed by adding the feminine suffix *-at- to their associated masculines; due to the pre-Proto-Semitic loss of their third radical, presumably *w, *-at- was lengthened to *-āt-, which became *-ōt- due to the Canaanite Shift. This parallels the lengthening of the

case vowels still seen in the masculine construct states *ʾăḥi* 'brother' and **ḥămi* 'father-in-law' (only attested before a suffix).

9.2.2 *qVṭl(at)um (segolates)

After the loss of the case endings, *qVṭlum nouns contained a word-final consonant cluster in the singular absolute state. In nouns from strong roots, this was resolved at a relatively late point in the history of Hebrew by the insertion of an epenthetic vowel, usually *ɛ, but *i after *y and usually *a after gutturals. If the third radical was *h*, *ḥ*, or ʿ, *ɛ regularly assimilated to *a, as in **ʾóreḥ > *ʾóraḥ* 'path' (Bauer & Leander 1922: 569). In a few words, a separate construct state like *ḥăḏar* 'room' (absolute *ḥéḏɛr* and *ḥéḏɛr*) is attested. With Steiner (1976), we may attribute this to early insertion of an epenthetic vowel before resonants; the further development of these forms, presumably to be reconstructed like *ḥadr > *ḥader, is then like that of construct states of *qaṭilum nouns, discussed below.

The plural forms of these segolates generally developed in the same way: in the absolute state, *qVṭalīma > *qṭålim*, with reduction of the first vowel and pretonic lengthening of the second one. *quṭlum nouns sometimes show an anomalous ɔ in the first syllable of the plural, as in *qɔḏåšim* 'holies', sg. *qóḏɛš*; this may be due to analogy with forms where a *ḥăṭepē qåmeṣ* was preserved, like *ḥŏḏåšim* 'months'. In the construct state and before heavy suffixes, *qVṭalay yielded *qəṭəlē. The first vowel developed to *i* or *a*, depending on the surrounding consonants and was frequently analogically influenced by the singular (see chapter 7); *quṭlum nouns analogically extended ɔ to the construct state plural. The second *šwå* was deleted, as it followed a light syllable.

In the singular, we find different developments of the vowel in the first syllable. *qaṭlum regularly developed to *qéṭɛl* in context, with assimilation of *a to the epenthetic *ɛ. The development of words like *ḏarʿum > *zárɛʿ > *zérɛʿ > *zéraʿ* 'seed' shows that this assimilation took place before that of the second *ɛ to *a before gutturals. In pause, *a was lengthened to *ā, which did not assimilate, resulting in pausal *qå̆́ṭɛl*. Before suffixes, *a was largely preserved, but sometimes analogically replaced by *i due to influence from the *qiṭlum paradigm.

*qiṭlum regularly merged with *qaṭlum in the context form of the absolute state due to Philippi and Blau's Laws (see chapter 6). Thus, the regular Biblical Hebrew outcome of *qiṭlum is *qéṭɛl*, as in **ṯsidqum > *ṣéḏɛq* 'righteousness'. As Blau's Law postdated major pausal lengthening, the regular pausal form is also *qéṭɛl*. Before

suffixes, *i was regularly preserved. As *qaṭlum and *qiṭlum partly merged in *qaṭl > *qéṭɛl*, the two paradigms exerted a large amount of analogical influence on each other, resulting in forms like *malko* 'his king' for regular **milko* < *milkahu, *qiḇro* 'his grave' for regular **qaḇro* < *qabrahu, and pausal *rǻḡɛl* 'foot' for regular **réḡɛl* < *riglum. *e < *i was also frequently restored in the absolute state of *qiṭlum nouns, based on analogies like *kaspó 'his silver' : *kásp 'silver' = *ʿegló 'his calf' : *ʿégl 'calf'. These analogically restored *qeṭl nouns then developed into *qéṭɛl*.

Weak roots

In an early change, syllable-final *ʾ was lost, with compensatory lengthening of the preceding vowel. In *qiṭlum and *quṭlum nouns, this regularly resulted in *qeṭ* and *qoṭ*, respectively, but where the *ʾ was maintained in spelling, it was usually secondarily reintroduced, yielding such artificial forms as *bʾer* < *biʾrum 'well', *mʾoḏ* < *muʾdam 'much'. The *ā that resulted from this loss changed to *ō due to the Canaanite Shift, as in *raʾsum > *rāsum > *roš* 'head'. In the plural, intervocalic *ʾ was lost with contraction of the surrounding vowels; *raʾasīma > *råšim* 'heads' shows that this development postdated the Canaanite Shift.

*qaṭlum nouns with *y as their second radical insert *i* instead of ɛ in the absolute singular, as in *báyiṯ* 'house'. In other forms of the singular, *ay is contracted to *ē > *e*. In *qiṭlum nouns (and II-y *quṭlum nouns, if they existed), *iy (and *uy) was contracted to *ī > *i*, as in *ʿiyrum > *ʿir* 'city'. Different plural formations are attested: the normal segolate plural with a-insertion can undergo triphthong contraction, as in *ʿiyarīma > *ʿårim* 'cities'; the consonantal *y can be analogically restored, as in *ʿăyårim* 'wild asses' (sg. *ʿáyir*); or the stem of the singular can be extended to the plural, as in *zeṯim* 'olive trees' (sg. *záyiṯ*). *báyiṯ* 'house' has the irregular plural *båttim* (cf. Aramaic *bāttīn*). Together with the precative particle *ʾånnå*, this is the only word in which *å* (normally reflecting *ā) occurs in a closed, unstressed syllable. In both cases, *å* is followed by a geminate; we may assume that, like Classical Arabic, Hebrew did not shorten long vowels in this position, contrary to their behaviour in other closed syllables. The *ā cannot be Proto-Northwest-Semitic, as long vowels in word-internal closed syllables cannot be reconstructed back that far. Rather, it may result from contraction of a triphthong, leading us to reconstruct *båttim* as *bayattīma. This is similar to the regular a-insertion found in the plural of segolates (cf. the singular *baytum), differing

only in the gemination of the third radical. This so-called pretonic gemination is also found in other words, e.g. *mɛrḥaqqim* < *mVrḥaqqīma 'distances' besides the singular *mɛrḥåq* < *mVrḥaqum, and has not yet been convincingly explained; given the existence of this phenomenon and its regular outcome as *båttim*, though, the reconstruction of *bayattīma seems certain.

Only a few *qaṭlum nouns with *w as their second radical maintain it, inserting ɛ and assimilating their *a > *å*, as in *mǻwɛ̱t*; in most cases, *aw is contracted to *ō > *o*, as in *yawmum > *yom* 'day' (see chapter 5). *quṭlum (and II-w *qiṭlum) nouns contract *uw > *ū > *u*, as in *suwqum > *šuq* 'market'. Plurals can be analogically restored, like *šwåqim* 'markets', or based on the singular stem, like *ṣomo̱t* 'fasts' (sg. *ṣom*); *yåmim* 'days' < *yamīma is derived from a different stem than the singular.

Two *qiṭlum nouns with *n as their second radical, *bintum and *gintum (< *gimtum), have undergone Philippi's Law and subsequent n-assimilation, resulting in *ba̱t* 'daughter' and *ga̱t* 'winepress', respectively. The *n is preserved in the irregular plural *banātum > *bånoṯ*.

*qVṭlum nominals from geminate roots did not undergo segolization, probably because the two adjacent identical radicals were realized as a single, long consonant. As they also did not participate in tonic lengthening or Philippi's Law, their original vocalism is largely preserved. *qaṭṭum yields *qaṭ* (and, in some prosodic contexts, *qåṭ*, see section 4.3.4), *qiṭṭum yields *qeṭ*, and *quṭṭum yields *qoṭ*. The singular stem has been generalized to the plural in most cases; alternatively, the originally inserted *a may have been deleted due to a haplological sound change that also affects geminate roots in other forms, as in *ʿamamīma > *ʿammīma > ʿ*ammim* 'peoples' (sg. ʿ*am*/ʿ*åm*). Plurals with analogically restored a-insertion like *ʿamamīma > ʿ*ămåmim* also occur. Although Proto-Semitic did not originally have any *qVṭlum adjectives (Fox 2003: 107), the sound change mentioned above also deleted the second vowel in *qaṭVlum adjectives from geminate roots, resulting in *qaṭ*/*qåṭ* adjectives like *tåm* 'perfect' and *raʿ*/*råʿ* 'bad'.

In *qaṭlum nouns with *y as their third radical, this was vocalized to *i in word-final position. In context, the stress shifted forward to this vowel and the preceding vowel was reduced, as in *gadyum > *gḏi* 'kid'. *qaṭlum nouns partially assimilated *a to *ɛ due to the following *y; this vowel was preserved in pause, as in *gɛ́ḏi*. Similar changes affeced *qaṭlum nouns with *w as their third radical: *a assimilated to *å* and *w was vocalized to *u, but the stress did not shift, resulting in

words like *ʾáḥu* ‘Nile reeds’. The plural regularly underwent triphthong contraction, as in *kilayīma > *kelim* ‘vessels’, but *y was usually restored, as in *gḏåyim* ‘kids’.

With a feminine suffix

The development of *qVṭlatum nouns is largely similar to that of their masculine counterparts, with the important difference that the second and third radical were not separated by an epenthetic vowel. *qaṭlatum was regularly attenuated to *qiṭlå* (see chapter 7), but *a* was often restored through analogy with the masculine. In the feminine, too, the stem was replaced by *qVṭal- in the plural. In the absolute state, this resulted in *qṭåloṯ*, while we find *qiṭloṯ* or *qaṭloṯ* in the construct and before suffixes.

9.2.3 *qV̆ṭV̆l((a)t)um

In the singular absolute state, *qV̆ṭalum nominals undergo both tonic and pretonic lengthening, as in *dabarum > *dåḇår* ‘word’, *śiʿarum > *śeʿår* ‘hair’; no clear *quṭalum nominals are attested (Fox 2003: 221). The construct state is regularly *qṭal*. Plural forms, deriving from *qV̆ṭalīma (absolute) and *qV̆ṭalay (construct), develop like the formally identical plurals of *qVṭlum nouns (see above).

*qaṭilum regularly yields *qåṭel* in the absolute state. In the construct state, many forms underwent Blau’s Law (see chapter 6), developing like *ḏaqinu > *zaqen > *zəqɛn > *zqan* ‘old (m.sg.)’. In other cases, *e* was analogically extended to the construct state. Before suffixes and in the absolute plural, *i was originally deleted before non-low vowels, but it was analogically restored and subsequently underwent pretonic lengthening as in *ḏaqinīma > *zqenim* ‘old (m.pl.)’ (see chapter 4). The construct plural, *qaṭilay, behaves like *qaṭalay, discussed above.

*qaṭulum nominals developed similar to *qaṭilum forms, the main difference being the different outcome of tonic and pretonic lengthening (as in *ʿamuqum > *ʿåmoq* ‘deep (m.sg.), *ʿamuqīma > *ʿămuqqim* ‘idem (m.pl.)’) and the non-operation of Blau’s Law in the construct singular. *u does shift to *a* in the construct state before word-final gutturals, leading to pairs like absolute *gåḇoăh* besides construct *gḇah* ‘high (m.sg.)’.

*quṭulum nouns are rare; the few possible cases like *ḥulumum > *ḥălom* ‘dream’ have completely merged with the *qiṭālum paradigm (Fox 2003: 205).

Besides the regular construct forms given above, a number of *qV̆ṭV̆lum nominals form constructs from another stem, *qV̆ṭlum, e.g. absolute *kå̱be̱d* besides construct *kɛ́ḇɛḏ* (and regular *kḇaḏ*) 'heavy (m.sg.)', absolute *ṣelåʿ* besides construct *ṣélaʿ* 'rib'. The vowel in the first syllable is always identical in both forms, suggesting that this alternation is the result of syncope of the second vowel in the construct state, a development which is also reflected outside of Northwest Semitic and which must therefore be early (Steiner 2012).

Weak roots

If the second radical was *w or *y, *qV̆ṭV̆lum nominals underwent triphthong contraction, resulting in *qål* if the second vowel was *a (as in *ʿayabum > *ʿå̱ḇ* 'cloud'), *qel* if it was *i (as in *gawirum > *ger* 'sojourner'), and *qol* if it was *u (as in *bawuṯīma > *bošim* 'ashamed (m.pl.)'; see chapter 5). As this contraction resulted in a long vowel, the stem remains unchanged in all forms of the paradigm.

In *qV̆ṭV̆lum nominals from geminate roots, the vowel in the second syllable was deleted in a Proto-Semitic sound change, merging these words with the *qVṭlum paradigm.

*qV̆ṭV̆lum nominals with *w or *y as their third radical, e.g. *śadayum > *śå̱ḏɛ* 'field', underwent triphthong contraction. As this was preceded by the dissimilation of unvoiced *u to *i next to bilabial consonants (discussed in chapter 3), this resulted in a paradigm with forms like *śadém in both the nominative (< *śadayum) and the genitive (< *śadayim) and *śadám in the accusative; the nominative–genitive form was generalized throughout the whole paradigm. Mimation was deleted by analogy with the great majority of nouns and adjectives which had lost it due to sound change and pretonic lengthening resulted in the attested forms like *śå̱ḏɛ*, with the regular change of word-final *-ē > *-ɛ̄; in the (proclitic) construct state, this change did not take place, resulting in forms like *śḏe*. In the plural, where the second syllable was followed by a long vowel, contraction yielded forms where the second radical was immediately followed by the plural ending, as in *śå̱ḏoṯ* 'fields'.

With a feminine suffix

Tonic and pretonic lengthening operated on *qV̆ṭalatum, *qV̆ṭilatum, and *qV̆ṭulatum nominals, which are reflected in Biblical Hebrew as *qṭå̱lå̱*, *qṭelå̱*, and *qṭullå̱*, respectively. In the construct state, *qV̆ṭV̆latu generally developed to *qəṭəlat >

qiṭlaṯ. The absolute plural forms *qṭåloṯ*, *qṭeloṯ*, and *qṭulloṯ*, as well as the construct plural *qiṭloṯ*, are explained in the same way.

Only few *qV̆ṭV̆ltum nominals are attested, if any. Notably, the possible examples (like *gḏɛ́rɛṯ* 'stone wall', if from *gadirtum) do not show pretonic lengthening of the vowel in the first syllable. It seems likely that the *-t- form of the feminine suffix was originally associated with non-absolute forms of the noun. These forms would then be secondary, only extended to the absolute state after the operation of pretonic lengthening. This would also explain the non-operation of Philippi's Law in *ʾɛ̆mɛṯ* 'truth', if this stem derives from the non-absolute form *ʾamint- associated with a hypothetical absolute state *ʾaminatum.

9.2.4 *qV̆ṭV̄l((a)t)um

The development of *qaṭV̄lum nominals is fairly straightforward: the long vowel in the second syllable remains unchanged in all forms, surfacing in Biblical Hebrew as *i* < *ī, *u* < *ū, or *o* < *ā (with the Canaanite Shift), while the short *a in the first syllable is pretonically lengthened to *å* in the absolute singular and reduced in all other forms. *ō < *ā regularly shifted to *ū in unstressed non-word-initial syllables, as in *matāqīma > *mṯuqim* 'sweet (m.pl.)', but *o* was analogically restored in most cases.

According to Fox (2003), the only *qV̆ṭV̄lum pattern with two high vowels that is reconstructable for Proto-Semitic is *quṭūlum. In Hebrew, the first *u was reduced due to the following non-low vowel, resulting in *qṭul*. This form of the stem is unchanged throughout the paradigm. As *quṭīlum and *qiṭīlum are not attested in other Semitic languages, Fox explains the Biblical Hebrew *qṭil* nouns (and one adjective) as loanwords or back formations, based on forms of *qaṭīlum nouns where the *a was reduced (pp. 193–194).

*qiṭālum undergoes the same reduction as *quṭūlum, as well as the Canaanite Shift, yielding an unchanging stem *qṭol*. While this is also sometimes seen as the outcome of *quṭālum (e.g. Fox 2003: 234), it is argued in chapter 3 that the Canaanite Shift did not operate after rounded vowels in the previous syllable. Thus, *quṭālum should have yielded **qṭål*; no unambiguous examples of this development are attested in the singular, the evidence being limited to *kurāʿayma > *krå*ʿ*áyim* 'shins'. A small number of other *quṭālum nouns occur in Biblical Hebrew, but as their *u is adjacent to a bilabial consonant in each case, it dissimilated

to *i, merging these words with *qiṭālum > *qṭol*, e.g. *burāṯum > *birāṯum > *broš* ‘juniper’.

Weak roots

Some words with *ʾ as their first radical have *e* in the first syllable instead of an expected *ḥåṭepē* vowel, like *ʾezor* < *ʾi^{d}zārum ‘loincloth’. In section 4.4, it is argued that *ṣere* was in free variation with the *ḥåṭepē* vowels in this position, which explains its absence in similar words like *ʾĕnoš* < *ʾināsum ‘man(kind)’.

With a feminine suffix

When the feminine suffix *-at- is added, the vowel in the first syllable is reduced in all cases, while the long vowel remains, resulting in *qṭilå*, *qṭulå*, and *qṭolå*. In words with the feminine suffix *-t-, the long vowel, which is now in a closed syllable, is shortened, and the *qV̆ṭV̄ltum noun merges with the corresponding *qV̆ṭV̆ltum pattern. Like in the latter paradigm, pretonic lengthening does not take place, as in *nḥóšɛ̯ṯ* ‘bronze’, if from *naḥustum < *naḥūstum (cf. the rare synonyms *nḥušå* and *nåḥuš*). This may indicate the secondary origin of these nouns.

9.2.5 *qVṭṭVl((a)t)um

According to Fox (2003), the reconstructible nominal patterns with a short vowel following a geminate second radical are *qaṭṭalum, *qaṭṭilum, *qaṭṭulum, and *quṭṭulum. The first vowel undergoes a qualitative change in all patterns but *qaṭṭalum, which is regularly reflected by *qaṭṭål*, with tonic lengthening in the absolute singular. As is argued in chapter 7, unstressed *a before a geminate assimilated in quality to a following stressed short vowel. Thus, *qaṭṭilum became *qiṭṭilum, while *qaṭṭulum merged with *quṭṭulum. *qiṭṭilum regularly developed to *qiṭṭel*; as the second *i follows a heavy syllable, it did not undergo pretonic lengthening and is reduced in the plural and before suffixes, as in *ʾillimīma > *ʾillmim* ‘dumb (m.pl.)’ (sg. *ʾillem*). *quṭṭulum seems to yield Biblical Hebrew *qiṭṭol*, as in one of the very few identifiable nouns of that pattern, *ṣippor* ‘bird’. The shift of *u to *i, generally seen as a form of dissimilation, has been explained in different ways: as the result of a general dissimilation of rounded vowels to *i before other rounded vowels (Huehnergard 1992: 222) or resulting from the

same reduction of *i and *u to *ə before non-low vowels seen in the *qV̆ṭVlum patterns, with a subsequent change of *ə > *i in closed, pretonic syllables (Garr 1985); in many of the possible *quṭṭulum nouns, the change may also be due to the dissimilation of unstressed *u > *i next to bilabials proposed in chapter 3.

The restrictions on vowel quality for *qVṭṭV̄lum nominals are the same as those for the *qVṭṭV̆lum patterns discussed above. *qaṭṭīlum and *qaṭṭūlum regularly yield *qaṭṭil* and *qaṭṭul*, respectively; these stems are unchanging throughout the paradigm. No secure *qaṭṭālum nominals are attested in Hebrew, although this is a very frequent pattern in other Semitic languages. Perhaps these words were morphologically transferred to *qaṭṭalum. The rather common category of *qiṭṭul* nouns may be reconstructed as *quṭṭūlum, with the same dissimilation in the first syllable seen in *quṭṭulum > *qiṭṭol*.

Weak roots

Words with a guttural second radical show degemination, either with compensatory lengthening of the preceding short vowel or without (virtual gemination). In *qaṭṭalum nominals with a virtually geminated second radical, *a has assimilated to ɛ before the following *å*, as in *paḥḥamum > *pɛḥåm* 'charcoal'.

Instead of *qVṭṭVlum nominals with a geminated second radical, some II-w roots form *qVṭlVlum nominals, reduplicating their third radical. Thus, we find *ṯawbabum > *šoḇåḇ* 'backsliding' instead of **šawwåḇ* from the root *šwb* 'to turn back' (Barth 1897).

With a feminine suffix

*qaṭṭVltum nouns do not show the same assimilation of *a to the following vowel as their counterparts. As with the apparent non-operation of pretonic lengthening in *qaṭVltum nouns, this may be due to the original non-absolute function of the *qaṭṭVlt- form of the stem. As the stress would not have fallen on the second vowel in non-absolute forms of the noun, the assimilation did not take place. *qaṭṭalatum yields *qaṭṭålå*, as in *ʾayyalatum > *ʾayyålå*.

9.2.6 *mVqṭVl((a)t)um

Of the various noun patterns with an m-prefix, special developments occur in *maqṭalum and *maqṭilum nouns. In a process often called the Law of Attenuation

(see chapter 7), the first *a of *maqṭalum nouns dissimilated to *e > *i* in a late change, limited to the Tiberian reading tradition, as in *magdalum > *maḡdål > *meḡdål > *miḡdål* 'tower'. This change was blocked before geminates, gutturals, and in a few other environments listed in chapter 7. As this development greatly increased the number of nouns with a *mi*-prefix, this may also have spread to other nouns where *ma- should have been preserved, as in *mizmor* 'psalm' (earlier *mazmōr, as in Hexaplaric μαζμωρ).

The absolute state of *maqṭilum nouns regularly developed to *maqṭel*, with tonic lengthening of the *i. In the construct state, this vowel developed to *a* through Blau's Law (see chapter 6 and the discussion of *qaṭilum nominals above), triggering the same dissimilation of *a > *i* seen in *maqṭalum nouns, as in *marbiṭu > *marbaṣ > *mirbaṣ* 'lying place (construct)'.

Weak roots

The most important deviation from the strong pattern is found with II-wy roots, which lost their second radical with lengthening of the following vowel in a pre-Proto-Semitic sound change. If this resulted in *ā, it regularly underwent the Canaanite Shift (see chapter 3), as in *maqāmum > *måqom* 'place'. Note that the *a is pretonically lengthened, as it is in an open syllable. In unstressed non-word-initial syllables, *ā > *ō regularly shifted to *ū, as in *ma^{t}ṣādahu > *mṣuḏo* 'his net', but *o* is analogically restored in most cases.

With a feminine suffix

Nouns with suffixed *-at- and *-t- behave as expected, with the minor point that unstressed *ō < *ā regularly develops to *ū, as in *manā^{t}satum > *mnusså* 'flight' besides the masculine *manā^{t}sum > *månos* 'refuge'; in some words, *o* was analogically restored, as in *mṣoḏå* (also *mṣuḏå*) 'net' based on *måṣoḏ* 'idem'.

9.2.7 Miscellaneous

Of the noun patterns with other prefixes than *mV-, only those with *ta- are somewhat frequent. These behave like the corresponding *maqṭVlum patterns.

The frequent nominal suffix *-ānum has regularly shifted to *-on* in most cases (see chapter 3). In a few words like *qɔrbån* 'offering', the Canaanite Shift was

blocked due to the preceding rounded vowel; from forms like these, the *-ån* form of the suffix was analogically extended to some other forms.

A unique interchange between geminated and ungeminated consonants is found in the *qiṭṭålon* noun pattern, e.g. *zikkåron* 'remembrance (absolute)' besides *zi̱kron* 'idem (construct)', *zi̱krono* 'his remembrance', etc. These words are usually reconstructed as *qVṭalānum, with irregular gemination of the second radical in the absolute singular (Blau 2010: 275). This gemination is ad hoc, however, and contradicted by many counterexamples. *Pace* Blau, it is easier to reconstruct this pattern as *qiṭṭalānum, with degemination occurring in forms where the non-pretonic *a was reduced.[1]

The adjectivizing *i*-suffix is also common. The vocalization of the plural, *-iyyim* (also *-im* with haplology) and *-iyyo̱t*, suggests a reconstruction as *-iyy-, but it should rather be reconstructed as *-īy-, which is more easily connected to the deviant form found in Aramaic, *-āy*. *-īyV is regularly reflected by *-iyyV* in Biblical Hebrew, as can be seen from *naqīyīma > *nqiyyim* 'innocent'. The same gemination took place before the feminine suffix *-at-, as in *-īyatum > *-iyyå*, while the form with the shorter feminine suffix, *-īytum, shortened its vowel in a closed syllable, developing to *-iytum > *-ītum > *-i̱t*.

Finally, it should be noted that many reduplicated nouns do not undergo tonic lengthening or the Law of Attenuation, which would disrupt the symmetry of the reduplicated parts; thus, for instance, *dardar* 'thistles' for regular **dirdår*.

9.3 Numerals

Table 9.1 lists the Biblical Hebrew absolute states of the cardinal numerals 1–10 and their Proto-Northwest-Semitic reconstruction. All PNWS forms are given in the nominative, but note that the forms of '2' go back to the oblique forms instead. Original *d has assimilated to a following coronal in *ʾaḥḥadtum > *ʾaḥḥattum and *sidt̲(at)um > *sitt̲(at)um; in the latter case, the *d is still attested in forms like the Classical Arabic cardinal *sādisun* (with dissimilation of *t̲ > *s*).

[1] Blau rejects this possibility because unemphatic plosives tend to retain their gemination in all circumstances, but there are a few other cases of this degemination (Bergsträsser 1918: 142). Assuming degemination before *šwå* was regular, analogical restoration of the gemination would be easy and desirable in most morphological classes, especially with the unemphatic plosives, where a postvocalic singleton would have undergone spirantization. In this noun pattern, however, the degemination seems to have been generalized as a morphophonological rule.

Table 9.1: Cardinal numerals 1–10 (reproduced from chapter 2)

meaning	masculine		feminine	
	PNWS	BH	PNWS	BH
1	*ʾaḥḥadum	ʾɛḥåḏ	*ʾaḥḥattum	ʾaḥaṯ
2	*t̲nāna	šnáyim	*t̲intāna	štáyim
3	*t̲alāṯatum	šlošå	*t̲alāṯum	šåloš
4	*ʾarbaʿatum	ʾarbåʿå	*ʾarbaʿum	ʾarbaʿ
5	*ḫamisatum	ḥămiššå	*ḫamisum	ḥåmeš
6	*siṯ̲tatum	šiššå	*siṯ̲tum	šeš
7	*sabʿatum	šiḇʿå	*sabʿum	šɛ́ḇaʿ
8	*t̲amāniyatum	šmonå	*t̲amāniyum	šmonɛ
9	*tisʿatum	tišʿå	*tisʿum	téša ʿ
10	*ʿaśaratum	ʿăśårå	*ʿaśrum	ʿɛ́śɛr

The *ḥ* in '1' is virtually geminated in both genders. In the masculine, *a has changed to ɛ through height assimilation to the following *å*. The best explanation for the unique initial cluster in *štáyim*, with a plosive *t*, is given by Bravmann (1952), who believes that, as in Syriac *šittā > *štā* 'six (m.)', the sequence *šitt- was reduced to *št-* due to the phonetic similarity between *š* and *i*. In *ʾarbaʿ*, the expected second vowel **å*, with tonic lengthening, is assimilated to the following guttural (Blau 1983). The gemination in *ḥămišša* is based on analogy or contamination with *šišša* (Brockelmann 1908: 486). Both forms of '8' show the regular contraction of a triphthong.

The masculine construct states *šlóšɛṯ̲*, *ʾarbáʿaṯ̲*, *ḥămɛ́šɛṯ̲*, *šɛ́šɛṯ̲*, and *ʿăśɛ́rɛṯ̲* all show the *-t- allomorph of the feminine suffix, rather than the *-at- found in the absolute state. This shorter allomorph is also associated with the construct state in some other nouns. The lack of gemination in *šɛ́šɛṯ̲* is usually attributed to influence from *ḥămɛ́šɛṯ̲*, but given the close parallel in the interchange between *ʾišša* (absolute) / *ʾéšɛṯ̲* (construct) 'woman', this may be the result of sound change. In the feminine, the construct states *šḇaʿ* and *tša ʿ* are vocalized as so-called reverse segolates; given the high sonority of their final consonant, this is probably due to early insertion of an epenthetic vowel, also found in forms like *zraʿ* 'seed (construct)' besides the absolute state *zɛ́raʿ* (Steiner 1976).

The cardinal numeral *rišon* 'first' is derived from *roš* 'head', with dissimilation of *ō > *ī before *ō (Bauer & Leander 1922: 628). The other cardinals all have the

adjectivizing suffix *-i* < *-īyum attached. Except in *šeni* 'second' and *šišši* 'sixth', the base is consistently *qaṭīl- > *qṭil-*. Note that the word for 'second' shows a pretonically lengthened *e*; if the reconstruction of the cardinals given here is correct, this *i may have been taken over from the feminine form at some point after the reduction of *i in open syllables before non-low vowels. The secondary creation of *šišši* may have been motivated by the dissimilarity between the ordinal *si̲t̲tum, with assimilation of *-d̲t̲- > *-t̲t̲-, and the regular ordinal *sadīt̲īyum.

The numbers 11–19 are formed by combining a (frequently reduced) form of the unit and a word expressing the '-teen', *ʿåśår* with masculine nouns and *ʿɛśre* (spelled <ʿšrh>) with feminine nouns. The masculine '-teen' can probably be reconstructed as *ʿaśarVm; the Classical Arabic cognate *ʿašara* does not show nunation, but this may be due to its different syntactic behavior, as the tonic lengthening in *ʿåśår* shows that this form was mimated. Given the existence of Ugaritic <ʿšrh>, the most straight-forward reconstruction for the feminine is *ʿiśrVhV, with yet another form of the stem and an otherwise unknown suffix.

The higher numerals all regularly derive from their Proto-Northwest-Semitic reconstructions, with some minor exceptions: *ḥămiššim* '50' and *šib̲ʿim* '70' have been analogically remodeled after *ḥămiššå* '5 (m.)' and *šib̲ʿå* '7 (m.)', respectively.

9.4 Verbs

For the reconstructed Proto-Northwest-Semitic and attested Biblical Hebrew paradigms of the strong verb, see chapter 2. The development of the perfect suffixes is discussed in chapter 8. One development that was not mentioned there was the change of word-final *-at to *-ā, which affected the third person feminine singular ending. This took place between triphthong contraction, as *banayat > *banāt (see the section on III-wy verbs below), and tonic lengthening.

9.4.1 The strong verb

Fientive and passive *qal*

As the unsuffixed verbal forms all ended in a long or short vowel, tonic lengthening did not apply to them. Either the short vowel was lost in the first apocope, closing the syllable before tonic lengthening could operate (e.g. *qaṭala > *qaṭál > *qåṭal*), or the long vowel remained, blocking the operation of tonic lengthening (e.g.

*qaṭalū > *qåṭlu*). Pretonic lengthening did take place in all open, originally pretonic syllables, i.e. in all forms but the second person plural; thus, for instance, *qaṭál > *qāṭál > *qåṭal*. At some point after the operation of pretonic lengthening, the third person feminine singular and third person plural participated in the stress shift from their short penultimate syllable to the ultimate, followed by reduction of the short vowel: *qāṭálā > *qāṭalá́ > *qåṭlå*, *qāṭálū > *qāṭalú́ > *qåṭlu*. In pause, the originally stressed vowel was lengthened and preserved, as in *qåṭǻlu*. For the perfect forms with suffixes, see chapter 8.

In the imperfect, the *a of the prefix shifted to *e and, much later, to *i*, resulting in forms like *yaqṭulu > *yeqṭol > *yiqṭol* (see chapter 7). Due to a stress shift (discussed in chapter 4), the unsuffixed forms of the jussive like *yáqṭul > *yaqṭúl > *yiqṭol* merged with the corresponding imperfect forms. This led to the extension of the original jussive forms in *-ū and *-ī to the imperfect, causing the reflexes of *yaqṭulū, *taqṭulū, and *taqṭulī to largely replace those of *yaqṭulūna, *taqṭulūna, and *taqṭulīna. These forms with a final long vowel underwent the same stress shift and reduction as some forms of the perfect, resulting in *yiqṭlu*, *tiqṭlu*, and *tiqṭli*. The second and third person feminine, *taqṭulna, acquired an additional word-final *-h through contamination with the independent personal pronouns (see chapter 8), resulting in *taqṭulnah > *tiqṭólnå*. Pronominal suffixes on the imperfect either attach to the original energic suffix, *-Vn-, or to a historically long *e*, which originated in the III-wy paradigm. The second person masculine singular suffix, as in *yiqṭɔlḵå*, is exceptionally not connected to a linking vowel; this may be due to the secondary form of this suffix.

The imperative can originally be reconstructed as the second person jussive without a prefix, as in the masculine singular *qṭul > *qṭol*. Before vocalic suffixes, the stem vowel was reduced after losing the stress; as can be seen in the masculine plural, *qṭúlū > *qəṭəlṹ > *qiṭlu*, the epenthetic schwa (also phonetically present in the singular) develops to *i*, as in the construct plural noun forms like *dabaray > *dəbərē > diḇre*. Notably, we find a different form of the imperative before suffixes, as in *qɔṭléni*. This allomorphy may be attributed to the different position of the stress: *qṭúlū > *qiṭlu*, *qṭulénī > *qɔṭléni*. This suggests a regular metathesis in this environment, *#CCoCV́ > #CoCCV́: thus, *qṭolénī > *qoṭlénī > *qɔṭléni*. Since imperatives with an a-vowel lengthen it in this environment, e.g. *qråʾéni* 'call me', this sound change may be considered a special case of pretonic lengthening.

The reconstruction of the infinitive construct is somewhat uncertain. It is closely connected to the imperfect stem in all paradigms, but does undergo tonic

lengthening in many cases; this suggests a reconstruction as *qṭulum, in which case the forms without tonic lengthening were analogically rederived from the prefix conjugation stem. The same metathesis seen in the imperative takes place before suffixes, although the infinitive construct takes nominal suffixes, as in *qɔṭlo*, vs. the verbal suffixes found on the imperative, as in *qɔṭléhu*; this offers some confirmation for the sound law and reconstruction suggested above. The infinitive absolute, *qåṭol*, regularly reflects *qaṭālum.

The active participle, *qāṭilum in the masculine singular, undergoes the Canaanite Shift and tonic lengthening, yielding Biblical Hebrew *qoṭel*. In the feminine singular, the regular forms are *qāṭiltum > *qoṭélɛṯ*, with Philippi's Law and segolization affecting the second syllable, and *qaṭilatum > *qoṭlå*, with non-operation of pretonic lengthening after a heavy syllable; the alternate form *qoṭelå* is analogically modeled after the masculine. In the plural forms, *qoṭlim* (m.) and *qoṭloṯ* (f.), pretonic lengthening does not apply either. One of the Proto-Northwest-Semitic passive *qal* participles, *qaṭūlum, became the productive form in Hebrew, regularly developing to *qåṭūl* like other nominals of the same pattern.

Like the other internal passive stems, the passive *qal* is largely formed by changing the vowels of the corresponding active stem to *-u-a-. In the perfect, pretonic lengthening geminated the second radical, as in *quṭála > *quṭṭal*. Otherwise, the passive *qal* perfect and imperfect were affected by the same sound changes as their active counterparts.

Stative *qal*

In the perfect, *qaṭila and *qaṭula developed to *qåṭel* and *qåṭol*, respectively, both with pretonic lengthening. *qaṭil- first and second person perfect forms underwent Philippi and Blau's Laws (see chapter 6), changing the vowel in the second syllable to *a* as in *qaṭilta > *qåṭåltå*; the corresponding forms from *qaṭul- verbs regularly retain their *o*. This partial merger of *qaṭila and *qaṭala led to the transfer of some verbs from the former category to the latter.

In the imperfect, *yiqṭalu regularly developed to *yiqṭal*, without any lengthened vowels. Stress-bearing endings in *nun* caused pretonic lengthening, also in context, as in *tadbaqīna > *tiḏbåqin* 'you (f.sg.) will stick'.

The development of the participle is similar to that of the perfect, with the difference that as a nominal form, it undergoes tonic lengthening: contrast perfect

*gabuha > *gå̱bah* ‘it was high’ with the participle, *gabuhum > *gå̱bóăh* ‘high (m.sg.)’.

Nipʿal

The prefix of the *nipʿal* perfect developed from *na- to *ne- and later *ni-* in closed syllables (see chapter 7). The second syllable of *naqṭal- developed like that of the fientive *qal* perfect, *qaṭal-.

In the imperfect, *yinqaṭilu > *yiqqåṭel*, the *n-prefix assimilated to the following radical. The *a was pretonically lengthened. In the second person feminine singular and second and third person masculine plural, the stress shifted to the word-final vowel, with reduction of the penultimate vowel. Philippi’s Law affected the second and third person feminine plural, *tinqatilna > *tiqqåṭálnå*. The merger of the jussive with the imperfect was not caused by any identifiable sound change in the *nipʿal*, but is rather analogical to the same merger in the *qal*.

The prefixed *hi-* in the imperative is probably secondary, analogically borrowed from the *hipʿil*, where the imperative stem is also synchronically formed by changing the prefix consonant of the jussive (e.g. *taqṭel*) to *h* (as in *haqṭel*). The same goes for the infinitive construct, *hiqqåṭel*. Of the two infinitive absolute forms, *niqṭol* is derived from the perfect and *hiqqåṭol* from the prefix conjugation. As in the stative *qal*, the participle is identical to the perfect stem, only with tonic lengthening.

Piʿel, *puʿal*, and *hi̱tpaʿel*

The change in the *piʿel* perfect of Proto-Northwest-Semitic *qaṭṭil- to Proto-Canaanite *qiṭṭil- is best explained as the result of an assimilation rule: *#CaC_1-$C_1\check{V}_1$ > *#$CV_1C_1C_1\check{V}_1$ (see chapter 7). Before consonants, the second *i of the perfect stem was affected by Philippi’s Law, resulting in forms like *qiṭṭáltå*. This form of the stem was extended to the second person plural, even though the *i was unstressed there, and sometimes to the third person masculine singular, causing *qiṭṭal* to compete with *qiṭṭel*.

No special developments affected the imperfect. The second and third person feminine plural should have undergone Philippi’s Law, but *e was analogically restored. As in the other derived stems (except for the *nipʿal*), the participle is formed by adding a prefix *mu- to the imperfect stem. In Hebrew, the *u of this prefix dissimilated to *i, but it was later lost in most forms.

The development of the *puʿal* forms is straightforward: perfect *quṭṭala > *quṭṭal*, imperfect *yuquṭṭalu > *yquṭṭal*, participle *muquṭṭalum > *mquṭṭål*.

The stem of the *hiṯpaʿel*, originally *-tqaṭṭal-, has changed to *-tqaṭṭil- in Hebrew, although some forms with *a between the second and the third radical remain. This may be due to contamination with the original Gt-stem, which was lost in Hebrew and seems to have merged with the tD-stem in some cases (Arnold 2005: 48–50). In that case, the Hebrew *hiṯpåʿel* would be something of a hybrid, combining features of the Gt-stem, *-qtaṭil-, as well as the tD-stem, *-tqaṭṭal-. As in the *niphʿal*, *hi-* was prefixed to the stem in word-initial position based on analogy with the *hiphʿil*.

Hiphʿil and *hɔphʿal*

In the strong verb, the *hiphʿil* contains the reflex of a long *ī between the second and third radical in all originally open syllables. This replaced the original short *i through analogy with the II-wy verb (see below): jussive *yaqim : imperfect *yaqīmu : perfect *hiqīma = jussive *yaqṭil : imperfect *yaqṭīlu : perfect *hiqtīla. This change in vowel length contributed to the preservation of the imperfect/jussive distinction in the *hiphʿil*. As the stressed syllable contained a long vowel in the perfect and imperfect, the stress did not shift to the ultimate in context, but rather stayed in place, yielding forms like *hiqṭílu*.

In the perfect, original *ha- was probably replaced by *hi- through analogy with the *piʿel* (Huehnergard 1992). As in other stems with *i before the third radical, the first and second persons were affected by Philippi's Law.

In the jussive, imperfect, and participle, the intervocalic *h was deleted together with the preceding vowel, resulting in forms like *yahaqṭilu > *yaqṭilu > *yaqṭil* and *muhaqṭilum > *maqṭilum > *maqṭil*.

The development of the *hɔphʿal* parallels that of the *puʿal*.

9.4.2 Guttural and weak verbs

Guttural verbs

In all verbs with one or more guttural radicals, reduced vowels usually become a *ḥåṭeph* vowel instead of the normal *šwå*; *šwå* that does not reflect a historical vowel is also often replaced by a *ḥåṭeph* vowel in verbs with a guttural first radical. If this *ḥåṭeph* vowel would occur in a closed syllable, it is written with the corresponding

full vowel, as in *yaʿaḇḏu* ‘they will serve’ instead of ***yaʿăḇḏu*, parallel to non-guttural *yiqṭlu*.

The main difference between non-guttural verbs and those with a guttural first radical is that in the prefix conjugation of the fientive *qal*, the prefix vowel *a did not shift to *e > *i*. Thus, the Barth–Ginsberg law still applies, as seen in the opposition between forms like *yaʿăḇoḏ* ‘he will serve’ and *yɛʿšar* ‘he will be rich’. The *a in the *niphʿal* perfect prefix did shift to *e > ɛ, as in *naʿzaba > *nɛʿĕzaḇ* ‘he was forsaken’, which shows that this is a different sound change than that affecting the *qal* prefixes (Lambdin 1985). In the *niphʿal* prefix conjugation, the gemination of the first radical was given up with compensatory lengthening of the preceding *e, e.g. *yinʿabidu > *yeʿʿābed > *yēʿābed > *yeʿåḇeḏ* ‘it will be cultivated’. The same change also affects verbs with *reš* as their first radical.

In verbs with a guttural second radical, short vowels following it are changed to *a* in forms that also occur with *a* for morphological reasons, like the *qal* perfect and imperfect and the *piʿel* perfect. It is unclear whether this is a morphological change, that only affected those verb forms where *a* could plausibly occur, or a sound change that was analogically canceled in those forms where the non-guttural verb only has non-*a* vowels, like the *piʿel* imperfect. The verb stems with a geminated second radical lost this gemination if the radical was guttural, with or without compensatory lengthening.

In verbs with a guttural third radical, short *e and *o have assimilated to *a* before the guttural in word-final position. In the infinitive, participle, *hiphʿil*, and pausal forms, *páṯaḥ furtivum* is inserted between a long, non-a vowel and a word-final guttural.

I-ʾ

While most verbs with *ʾ as their first radical behave like other I-guttural roots, a few frequent verbs have retained forms that are the regular outcome of sound change. In the *qal* prefix conjugation, *aʾC > *āC > *ōC (Canaanite Shift), e.g. *yaʾkulu > *yōkol. Verbs with *u as their theme vowel underwent dissimilation: after *ō in the preceding syllable, short *o becomes *a, as in *yoḵal* ‘he will eat’, while pausal, long *ō shifts to *ē, as in *toḵel* ‘you (m.sg.) will eat’ (see chapter 6). In the imperative and infinitive construct, *u was retained, as there was no prefix to cause dissimilation. Hence, we find forms like *ʾĕḵol* ‘eat (m.sg.)’ and ‘to eat’. The forms like *ʾoḥez* ‘I will seize’ and *wayyóḥɛz* ‘and he seized’ suggest

that *ʾḥz* originally had an *i theme vowel, rather than *u. The development of the highly frequent verb *ʾmr* 'to say' is further complicated by the dissimilation of *u > *i in unstressed syllables, caused by the preceding *m (see chapter 3). Thus, while we find the same development as that of *ʾkl* in the imperfect, the consecutive imperfect developed from *yáʾmur > *yáʾmir > *yṓmer > *wayyómɛr* 'and he said', pausal *wayyomar* with the pausal stress shift and Blau's Law (also discussed in chapter 6).

I-wy

Fientive verbs with *w as their first radical share certain weak features in all classical Semitic languages and are probably partially biconsonantal in origin. This situation was complicated in Northwest Semitic by the sound change of word-initial *w- > *y-, which affected the perfect of these verbs in the *qal*, *piʿel* and *puʿal*; *y was later analogically extended to the prefix conjugation of these stems, as well as the *hitpaʿel*.

The fientive *qal* prefix conjugation stem was originally only based on the second and third radical, as in *yaṯibu 'he will sit' from *yṯb (< *wṯb). In Hebrew, the first radical *y was analogically introduced into these forms, resulting in *yayṯibu > *yešeḇ*. The normal defective spelling of the prefix vowel *e*, as in <yšb>, may indicate that the expected archaic forms like *yāšeb were still in use when the orthography of the Hebrew Bible was fixed. This may be contrasted with the stative *qal*, where the historically present *y is regularly spelled, as in (pre-Proto-Northwest-Semitic *yiwraṯu >) *yiyraṯu > *yiraš* <yyrš> 'he will inherit'. In the consecutive imperfect, fientive forms maintained the original penultimate stress in unsuffixed forms, like *wayyéšɛḇ*, while the sonorous *a attracted the stress in stative forms like *wayyiráš* (see section 4.2).

The *qal* imperative and infinitive construct are biradical, an inherited feature of these verbs. The imperative is formed on the old stem of the prefix conjugation, without the analogically added *y, while the infinitive construct adds a feminine suffix *-t- (rarely *-at-). In these latter forms, Philippi's Law was operative (see chapter 6), the most common form developing like *sibtum > *šebt > *šɛbt > *šɛḇɛṯ* 'to sit'; the original *i is retained in suffixed forms like *šiḇṯḵå* 'your (m.sg.) sitting'.

In the *nipʿal*, *w was preserved due to its word-internal position. In the perfect, the unstressed diphthong *aw was contracted to ō, presumably before the change

of *a > *e in the prefix, as in *nawtara > *no̲tar* 'it was left'. In the prefix conjugation, n-assimilation resulted in a geminate *ww, as in *yinwatiru > *yiwwå̲ter* 'it will be left'.

The *hip̄ʿil* forms are similar to those of the *nip̄ʿal* perfect, e.g. *hawt̲iba > *hošib̲* 'he settled', *yahawt̲ibu > *yošib̲* 'he will settle'. A few verbs with original *y as their first radical are still distinguishable in the *hip̄ʿil*, where they develop like *hayniqat > *heníqå* 'she suckled'. In the *hɔp̄ʿal*, verbs with original *w contract the diphthong in their first syllable to *ū, as in *huwt̲aba > *hušab̲* 'he was settled'.

I-n

If the first radical of a verb is *n, it regularly assimilates to a following consonant, as in *yanpulu > *yippol* 'he will fall', although it is analogically restored in verbs with a guttural second radical. Most I-n verbs lose the first radical in the imperative and infinitive construct. These verbs, however, are only weak in languages that undergo n-assimilation, but not in other languages, like Arabic or Gəʿəz. This biradical formation of the imperative and the infinitive construct should therefore be attributed to the assimilation of the first radical in the prefix conjugation, which was analogically extended to the imperative: jussive *teqṭol : imperative *qṭol = jussive *tetten 'you may give' : imperative *tten > *ten* 'give' with degemination of the word-initial geminate. These imperative forms then gave rise to biradical infinitive construct forms through analogy with the I-w verbs (see above).

II=III

Most of the weak features of the geminate verbs are inherited from earlier stages of the language.[2] They show the result of two sound changes: the deletion of a short vowel between two identical consonants, as in *ᵗsababa > *ᵗsabba > *sab̲* 'he turned', and the metathesis of a short vowel in order to produce a geminate, as in *yaᵗsbubu > *yaᵗsubbu > *yåsob̲* 'he will turn'. In the perfect of the *qal*, *nip̄ʿal*, *hip̄ʿil*, and *hɔp̄ʿal*, a linking vowel *ā occurs between the stem and suffixes starting with a consonant; this *ā is affected by the Canaanite Shift, as in *ᵗsabbāta > *sabbóṭå* 'you turned'. Imperfect feminine plural forms of these stems insert a linking vowel -ɛ- after the stem through analogy with the III-wy verbs (see below): 3m.pl. *yebnū : 3f.pl. *tebnēnā = 3m.pl. *yasobbū : 3f.pl. *tasobbēnā. In the *qal* imperfect, *nip̄ʿal*

[2]The ideas expressed in the next two sections are argued more fully in Suchard (forthcoming).

perfect, and *hip̄ʿil*, the prefix vowel is in an open syllable, unlike in the strong verb. It is accordingly lengthened in pretonic position and reduced when further away from the stress. The *qal* and *hip̄ʿil* consecutive imperfect maintain the original penultimate stress in context, as in *wayyṓsɔb̲* 'and he turned' (see section 4.2). So-called Aramaising forms with a geminated first radical, like *yissob̲*, are based on analogy with the I-n verbs: *ten* 'give (m.sg.)' : *yitten* 'he will give' = *sob̲* 'turn (m.sg.)' : *yissob̲* 'he will turn'. Finally, the geminate verbs can either form a regular *piʿel*, with gemination of the second radical, or a *polel*, with *w inserted before the second radical, as in *ᵗsawbiba > *sob̲eb̲*. This is an analogy with the II-w verbs (see below): what was originally the second radical in these forms in a *qaṭlila form has been reanalysed as an infix, allowing the pattern to be extended to the geminate verbs as *qawlila. The presence of a long *ū in the *hɔp̄ʿal* prefix, as in *husab̲*, is also taken over from the II-wy verbs, while the *a* vowel in some *hip̄ʿil* perfects like *hep̄ar* 'he broke (pause)' is due to dissimilation from the preceding *e* (see chapter 6).

II-wy

The hollow verb is another category that inherited some weak features from Proto-Semitic. Wherever the first and second radical came into contact, the second radical was lost with lengthening of the following vowel, as in *yaqwumu > *yaqūmu > *yåqum* 'he will stand up'. When this resulted in *ā, as in a few stative *qal* imperfects and the *nip̄ʿal*, this vowel underwent the Canaanite Shift, as in *yibāṯu > *yeb̲oš̌*[3] 'he will be ashamed' and *nakāna > *nåk̲on* 'it is established'. This ō frequently surfaces as *u* in unstressed position. As in the geminate verbs, prefix vowels are more frequently in open syllables than in the strong verb, resulting in pretonic lengthening or reduction.

The *qal* perfect underwent triphthong contraction, resulting in a long *ā in the fientive verb and *ē or *ō in the stative verb (see chapter 5). In closed syllables, this vowel was shortened, as in *qawamta > *qāmta > *qamta > *qámtå* 'you (m.sg.) stood up'. The same contraction affected the *qal* participle, which has an identical stem to that of the perfect, e.g. *qåm* 'standing'. The imperfect feminine plural forms insert -ɛ- before their suffix, like the II=III verbs. The imperative has secondarily been adapted to the imperfect stem, replacing the expected *qum >

[3] With analogical retention of the prefix vowel, which should be lost in this position (see section 4.4).

***qom* by *qūm > *qum*, while the infinitive construct may simply have preserved the non-word-final form of the jussive stem, as in *qūmum > *qum*. As in some other categories of weak verbs, the consecutive imperfect preserves the penultimate stress in context, as in *wayyǻqɔm*. The infinitive absolute regularly contracts its triphthong, resulting in *qawāmum > *qawōmum > *qōmum > *qom*.

The same linking vowel *ā > *-o-* found in the geminate paradigm occurs in the *nip̄ʿal* and usually *hip̄ʿil* perfect of hollow verbs. In analogy with the geminate verb, the *nip̄ʿal* has extended its perfect stem to the prefix conjugation: perfect *nåsab̲* : imperfect *yissab̲* = perfect *nåk̲on* : imperfect *yikkon*. An analogy with the I-y verbs is found in the causative stems, where the similarity between II-wy forms like *hiqīma > *hēqīm 'he erected' and I-y forms like *hayṭiba > *hēṭīb 'he did well' caused the I-wy form of the *hɔp̄ʿal* to be extended to the II-wy paradigm, as in *huqam*. Another peculiarity of these verbs is their *hip̄ʿil* participle, formed like *meqim*. The historically short vowel in the first syllable results from loss of the original intervocalic *h with preservation of the preceding vowel in an open syllable: *muhaqīmum > *mihaqīmum (with dissimilation, see chapter 3) > *miqīmum > *meqim*.

Instead of stems with a geminated second radical, II-wy verbs usually form a *polel*, *polal*, and *hit̲polel*. The *o* in these forms goes back to a contracted diphthong *aw, where *w was originally the second radical of the II-w verbs, as in *qawmima > *qomem*; *qawmima, in turn, regularly goes back to the expected D-stem, *qawwima (Barth 1897).

III-wy

Most forms of verbs with a glide as their third radical were still strong in Proto-Northwest-Semitic.[4] Triphthong contraction (see chapter 5) affects the endings of the third person perfect, most imperfect forms and the active participle of verbs with *w or *y as a third radical in all stems. The regular outcome of this contraction is *-å* for forms ending in *-a, as in *banaya > *bånå* 'he built'; *-ɛ* for forms ending in *-u, as in *yabniyu > *yib̲nɛ* 'he will build' (including the masculine active participle, e.g. *bonɛ*); *-u* for forms ending in *-ū, as in *banayū > *bånu* 'they built'; and *-i* in the second person feminine imperfect, ending in *-ī, as in *tabniyī > *tib̲ni* 'you (f.sg.) will build'. The merger of the stative and fientive

[4]Some of the reconstructions in this section were first presented at the 12. Mainz International Colloquium on Ancient Hebrew, held 30 October through 1 November 2015 at the Johannes Gutenberg Universität Mainz. I thank the attending audience for their comments.

paradigms in most forms prompted the generalization of the stative paradigm, as can be seen from forms like *baniyta > *bånítå* 'you (m.sg.) built' also occurring in historically fientive verbs. The third person feminine perfect first regularly developed to *banayat > *banāt > *banat and then added an additional feminine ending, yielding *banatat > *bånṯå*. The feminine plural imperfect form *tiḇnɛ́nå*, if not originally stative, is due to analogy with the strong verb, where the feminine plural is formed by adding *-nå* to the singular.

In the jussive, as in Classical Arabic, the third radical was absent in unsuffixed forms, as in *yabni. The word-final vowel was regularly lost. The resulting word-final consonant cluster is sometimes retained, as in *yasti > *wayyešt* 'and he drank', and sometimes resolved by an epenthetic vowel, as in *yabni > *wayyíḇɛn* 'and he built'. The masculine singular imperative, which similarly goes back to a form with a lost third radical, regularly develops like *bni > *bne*. The infinitive absolute, *båno* for expected **bånoy*, is due to analogy with the strong verb: perfect *qåṭal* : infinitive *qåṭol* = perfect *bånå* : infinitive *båno*. The infinitive construct regularly develops from Proto-Northwest-Semitic *binātum > *bnoṯ* (see chapter 4 for the reduction of *i); this was originally a *qiṭlatum* verbal noun, with a pre-Proto-Semitic sound change turning *binyatum into *binātum. The passive participle regularly retains its glide, as in *banūyum > *bånuy*.

In the *niפ̄ʿal*, the first and second person perfect forms do not have *-i- < *-iy- after the second radical, but *-e- < *-ay-. The consecutive imperfect, like *wattiggål* 'and you (m.sg.) revealed', is analogically formed by simply removing the ending of the imperfect *tiggålɛ* 'you (m.sg.) will reveal', based on the model of the *qal*. Similarly, the word-final vowel is reintroduced in the imperative, *higgåle* 'reveal (m.sg.)', through analogy with the interchange between *sḡol* and *ṣere* in the *qal* imperfect and imperative. The same happens in the other derived stems, although regular forms like *ᵗṣawwi > *ṣaw* 'command (m.sg.)' are also preserved. The occasional first person singular perfect forms with *e* in the *piʿel* and *hiפ̄ʿil*, like *gilléṯi* 'I revealed' for normal *gillíṯi*, are best explained with Rubin (2001) as resulting from a dissimilatory sound change with a very limited conditioning.

III-ʾ

The peculiarities of verbs with *ʾ as their third radical are due to a fairly late elision of that consonant in syllable-final position, with compensatory lengthening of the preceding vowel, e.g. *qāraʾ > *qårå* 'he called', *qāraʾtī > *qårǻṯi* 'I called'. This is

a later sound change than that affecting words like *ra›sum > *roš*; in these verbs, *› was analogically restored and maintained until much later. Other deviations from the strong paradigm are due to analogy with the III-wy paradigm.

10 General conclusion

The aim of this work was to establish to what degree the development of the vowels from Proto-Northwest-Semitic to Biblical Hebrew could be described from a Neogrammarian framework, modified by insights from more recent scholarship. Specifically, the issue was whether sound change could be conditioned by non-phonetic factors. We have seen that on closer examination, the vast majority of sound changes considered are strictly phonetically conditioned.

In chapter 3, we found no evidence for stress conditioning of the Canaanite Shift. All Proto-Northwest-Semitic cases of *ā and *aˀ shifted to *ō, except when preceded by a rounded vowel or *w. The operation of the Canaanite Shift in some words where an *u should be reconstructed in the syllable preceding the *ā, like *rummānum > *rimmon* 'pomegranate', revealed the existence of a dissimilatory sound change of unstressed *u (or *o) to *i (or *e) when adjacent to a bilabial consonant.

Chapter 4 confirmed that the position of the stress in Biblical Hebrew results from the regular stressing of penultimate syllables in Proto-Canaanite, if not earlier, with some regular sound changes shifting the stress forward in different phonetic and prosodic environments. Tonic lengthening was not conditioned by morphology, as would be the case if it affected nouns differently than verbs, but by phonetics alone: the different reflex of stressed vowels in different word classes can be explained by a difference in reconstructed form. The few seeming exceptions to pretonic lengthening were explained as resulting from unusual syllable structures (as with *t̲nayma > *šnáyim* 'two (m.)') or from analogy (as with ˀĕmɛ̆t̲ 'truth'), while the regularity of pausal lengthening is uncontroversial. Some apparently irregular processes were identified as well: the reflex of *qaṭ̬ṭum nouns as either *qaṭ̬* or *qåṭ̬*, the prosodic retraction of the stress (*nsiḡå*), the stress shift in the consecutive perfect, and that in some hollow verbal forms.

The discussion of the development of the triphthongs in chapter 5 mainly yielded a somewhat simpler account of the history of II-wy and III-wy roots, which also explains why these roots show seeming counterexamples to the Canaanite Shift.

We saw that original triphthongs (i.e. *VWV) behave differently than original diphthongs (i.e. *VWC or *VW#). A new finding concerning the latter is that *-o-*, not *-ǻwɛ-*, is the regular reflex of stressed *-áw- in Hebrew.

Chapter 6 identified a number of sound changes at work in what is generally known as Philippi's Law, all of them phonetically regular. After (*i >) *e had changed to *ɛ in several environments at different points in time, a late change of stressed *ɛ́ > *á, referred to as Blau's Law, yielded the Biblical Hebrew situation.

A similar interplay between different sound changes was identified in chapter 7 on the Law of Attenuation. Many different changes of *a > *e affected earlier stages of Hebrew and its ancestors. As argued in chapter 2, these vowels are still phonemically /e/ in Biblical Hebrew, but phonetically, they have shifted to *i* or ɛ. While the operation of the exclusively Tiberian dissimilation of *a to *i* could be explained based on phonetic conditioning and analogy, it may alternatively be a case of lexical diffusion.

Finally, chapter 8 examined the seemingly erratic behavior of word-final vowels in the personal pronouns and related forms. These could all be explained as resulting from their Proto-Northwest-Semitic reconstructions through accepted linguistic processes, with contamination and analogy playing a large role besides sound change.

Thus, while most of the sound changes affecting the Biblical Hebrew vowels can be formulated as regular laws, a small group of irregular changes remains. How should we interpret these?

Three of the seemingly irregular changes identified in chapter 4 belong to the realm of prosody. The *qåṭ* reflexes of *qaṭ̈ṭum nouns were explained as minor pausal forms. Their alternation with *qaṭ* reflexes of the same words is probably governed by the prosodic context, which cannot accurately be recovered from the written text; the same goes for *nsiḡå* and the stress shift in the consecutive perfect. These changes are not unconditioned, then, but conditioned by factors that we do not have access to. The irregular stressing of verbal endings in hollow verb forms may be due to contamination with strong verbs and other weak categories, where these endings are normally stressed in context; like other forms of morphological change, contamination is not expected to operate regularly.

In conclusion, then, Biblical Hebrew does not provide any evidence that is incompatible with the purely phonetic conditioning of sound change. The search for phonetically conditioned, plausible sound laws also uncovered a considerable number of previously unrecognized sound changes and had some interesting

implications for the reconstruction of Proto-Northwest-Semitic and its ancestors, discussed in chapter 9 together with the historical morphology of Biblical Hebrew. Similarly fruitful results may be expected from research into the historical grammar of other Semitic languages, taking the Neogrammarian Hypothesis as its point of departure – which, in all fairness, has never really ceased since Brockelmann (1908), however accepted non-phonetically conditioned sound change may be among some Semiticists. It is my hope that the additional support lent to the Neogrammarian point of view by the present study will encourage such research in future.

The following section contains a combined relative chronology of the sound changes discussed in this work, inspired by that in Dolgopolsky (1999).

10.1 Combined relative chronology

This section lists the various sound changes affecting vowels which were operative between Proto-Northwest-Semitic and Biblical Hebrew. The first subsection contains the relative chronology. It should be noted that only numerals (both Arabic and Roman) indicate a chronological order; sound changes that are only distinguished by letters cannot be dated relative to one another. Thus, for example, (4(a)iA) must postdate (3) and antedate the changes listed under (4(a)iiA) and (4(a)iiB), but it cannot be dated relative to (4(b)i) and (4(b)ii). Every sound change is illustrated by one or more examples and sometimes counterexamples supporting the sound change's conditioning. The entire development of all the words used as examples and counterexamples can be found in the second subsection. Sound changes and examples are cross-referenced.

As the development of the Proto-Northwest-Semitic affricates, interdentals, velar fricatives and *s does not interact with the vowels, the Biblical Hebrew value of these phonemes has anachronistically been projected back for simplicity's sake. Some other minor sound changes that only affected one or two words have also been left out of this overview.

To avoid nesting lists with more than five levels, some sound changes have been listed as having occurred before or after some other changes for which this cannot be ascertained. For example, most of the stress shifts are listed under (5), even though some of them may have antedated some changes in (4). In general, though, the order given seems the most likely. As far as absolute dating goes,

the changes under (1–2) and maybe (3) can be dated to the Proto-Canaanite stage (second millennium BCE), (4) largely yields the Proto-Hebrew stage (first millennium BCE), while the changes in (5–8) predominantly seem to have affected the reading tradition (first millennium CE).

10.1.1 Sound changes

1. a) i. A. 1. All prosodic words stress the penultimate syllable. Example: *burāšum > *burášum (1).

   2. *aC$_1$C$_1$V́$_1$ > *V$_1$C$_1$C$_1$V́$_1$. Example: *qaṭṭílat > *qiṭṭílat (2).

   3. In unstressed syllables, *u > *i next to labial consonants. Example: *burášum > *birášim (1).

   4. Elision of intervocalic *h: *V$_1$hV$_2$ > *V$_1$ / _C$_1$(C$_1$)V, *V$_1$hV$_2$ > *V$_2$ / _C$_1$C$_2$. Examples: *mihaqím > *miqím (3), *bahímma > *bámma (4), *mihaqṭílim > *maqṭílim (5).

   B. 1. *i > *e, *u > o. Example: *yabníyu > *yabnéyo (6).

   2. *V^{ʾ}> *V̄ /_$. Many cases of syllable-final *^{ʾ} were analogically restored. Example: *ra^{ʾ}šum > *rāšum (7).

   ii. The Canaanite Shift: *ā > *ō, except after rounded vowels or *w in the preceding syllable. In unstressed, non-word-initial syllables, *ā > *ū. Examples: *birášim > *birőšim (1); *qawámnā > *qawámnū (8). Counterexample: *kurā^{ʿ}áyma (9).

   b) *o > *e / _#. Example: *yabnéyo > *yabnéye (6).

2. Contraction of triphthongs: *V̆$_1$WV$_2$ > *V̄$_2$. Examples: *yabnéye > *yabné (6); *bawóša > *bőša (10); *qawámnū > *qámnū (8); *bōneye > *bōnē (11).

3. *V̄ > *V̆ /_C$. Example: *qámnū > *qámnū (8).

4. a) i. A. First apocope: unstressed *V̆ > Ø /_#. Example: *korā^{ʿ}áyma > *korā^{ʿ}áym (9).

   B. *Vt > *V̄ /_#. Example: *qeṭṭélat > *qeṭṭélā (2).

   ii. A. 1. Loss of mimation: *m > Ø/_# after unstressed vowels. Remaining instances of mimation were analogically deleted.

Example: *berṓšem > *berṓše (1). Counterexample: *qōṭelím (12).

2. *ē > *ɛ̄ / _#. *ē at the end of proclitic words does not count as word-final. Example: *yebné > *yebnɛ́ (6).

B. 1. Tonic lengthening: *V̆́ > *V́ /_CV̆. Example: *śeʿáre > *śeʿā́re (13). Counterexample: *qaṭálū (14).

2. *ah > *ā /_#. Example: *qédmah > *qédmā (15).

3. *VCCVC > *VCCV́C. Example: *yáqṭol > *yaqṭól (16).

4. *a > *e / _C[-guttural]CV́#, _C[-guttural]CV̆́C#, _CCá, _CCáC#. Examples: *yabnɛ́ > *yebnɛ́ (6); *yaqṭól > *yeqṭól (16, 17); *naqṭál > *neqṭál (18).

iii. Second apocope: unstressed *V̆ > Ø /_#. Example: *berṓše > *berṓš (1).

iv. A. 1. Philippi's Law: *é > *ɛ́ /_C_1C_2, except in word-initial syllables of polysyllabic words. Example: *kabédtī > *kabɛ́dtī (19). Counterexample: *qédmā (15).

2. *nC > *CC. Example: *bɛ́nt > *bɛ́tt (20).

B. 1. *y > *i /C_#. Example: *bɛ́ky > *bɛ́ki (21).

2. Minor pausal lengthening: *V̆́ > *V́ / _CV in minor and major pause. Example: *ʾánī > *ʾā́nī (22).

3. *w > *u /C_#. Example: *wayyeštáḥw > *wayyeštáḥu (23).

C. 1. *ʾ > Ø /C_#. Example: *šáwʾ > *šáw (24).

2. *aw > *ō /_C[-w], except in word-final syllables, if followed by *t, *k, or preceded by *ʾ. Example: *yáwm > *yṓm (25). Counterexamples: *šáw (24); *máwt (26).

D. *ay > *ē in non-word-final syllables, except before *y. Example: *dabaray > dabarē (27). Counterexample: *korāʿáym (9).

E. *á́t > *á́ / _#. Example: *šaná́t > *šaná́ (28).

b) i. *e, *o > ə /_CV[-low]. *e and *o were analogically restored before morpheme boundaries. Example: *berṓš > *bərṓš (1).

ii. Pretonic lengthening: *a > *ā /_CV́, *e > *ē / _CV́ except after a heavy syllable, *C_1 > *C_1C_1 /o_V́ except after a heavy syllable. Examples: *kabɛ́dtī > *kābɛ́dtī (19); *śeʿár > *śēʿár (13); *ʿamoqím > *ʿamoqqím (29). Counterexample: *qōṭelím (12).

5. a) i. *V̆CV̄ > *V̆CV́. Example: *qāṭálū > *qāṭalú (14).

ii. Unstressed *V̆ > *ə /_CV. After gutturals, *ḥåṭepē* vowels occur as allophonic variants of *ə. Example: *korāʿáym > *kərāʿáym (9).

b) i. #CV́CVC > #CVCV́C. Example: *yélek > yēlék (30). Counterexample: *wayyélek (31).

ii. In unstressed, lexically word-final syllables, *e > *ɛ, *o > *ɔ. The last syllable of construct states exceptionally counts as word-final for this rule. Example: *wayyélek > *wayyélɛk (31)

iii. In pause, *V́CVC# > *VCV́C#. Example: *wayyélɛk > *wayyēlɛ́k (31).

c) i. *V́CaC > *VCáC. Example: *wayyíšan > *wayyīšán (32).

ii. Major pausal lengthening: *V̆́ > *V́ in major pause. Example: *wayyīšán > *wayyīšáń (32).

6. a) i. *á > *ǻ /_w, _m. Example: *bámm > *bǻmm (4).

ii. Many construct states become stressed in the reading tradition, receiving the stress on the same syllable as their absolute states. Example: *bōnē > *bōné (11).

b) i. Guttural degemination: *VC_1[guttural, r]C_1 > *$\bar{V}C_1$. In many cases, the short vowel and geminate were analogically restored, the geminate only being simplified in (8(a)ii). Each guttural consonant may have been degeminated under different conditions: especially *ḥ and, to a lesser degree, *h seem to have withstood this sound change. Example: *yəbarrék > *yəbārék (33).

ii. *ā > *å. Example: *kərāʿáym > *kərǻʿáym (9).

iii. A. Blau's Law: *ɛ́ > *á /_C$, *ɛ̄́ > *á́ /_C$. Long and short stressed *ɔ́ > *ó in the same environment. Examples: *bɛ́tt > *bátt (20), *wayyēlɛ̄́k > *wayyēlák (31)

B. Segolization: *VyC[-y]# > *V̄yiC#, *VC$_1$[guttural]C$_2$# > *V̄C$_1$aC$_2$# (*V̄C$_1$ɛC$_2$# in some cases), *VC$_1$[-y -guttural]C$_2$# > *V̄C$_1$ɛC$_2$#. Examples: *kərå̊ʿáym > *kərå̊ʿáyim (9); *báʿl > *báʿal* (34); *kálb > *kálɛb (35).

C. *é́ > *ɛ́ / _Cå̊. Example: *ʿå̊lékå̊ > *ʿå̊lɛ́kå̊ (36).

7. a) i. *ā > *ɛ̄/_Cɛ. Example: *kálɛb > *kɛ́lɛb (35).

ii. *V̆ > *a /_C[guttural]#. Example: *zɛ́rɛʿ > *zɛ́raʿ (37).

b) i. *é > *ɛ́ /_C$_1$[coronal]C$_1$. Example: *karméll > *karmɛ́ll (38).

ii. Word-final degemination: *C$_1$C$_1$ > *C$_1$ /_#. Example: *bátt > *bát (20).

iii. Spirantization: post-vocalic, non-geminate *p > *p̄, *b > *b̲, *t > *t̲, *d > *d̲, *k > *k̲, *g > *ḡ. Example: *yebné́ > *yeb̲né́ (6).

c) *a > *e / C[-guttural]_C$_1$[-guttural]C$_2$[-nasal]{å|á|é́}, except in reduplicated syllables or if the consonant cluster following the first *a contains *ʾ. Example: *magd̄å̊l > *megd̄å̊l (39). For more examples and counterexamples, see section 7.3.1.

8. a) i. In closed syllables, unstressed *e > *ɛ next to gutturals, *i elsewhere; unstressed *o > *u before geminates, *ɔ elsewhere. Examples: *yeb̲né́ > *yib̲né́ (6); *ʿamoqq́im > *ʿamuqq́im (29).

ii. Second round of guttural degemination: *VC$_1$[guttural]C$_1$ > *VC$_1$. Example: *ʾaḥḥå̊d̲ > *ʾaḥå̊d̲ (40).

iii. *a > *ɛ / _Cå̊. Example: *ʾaḥå̊d̲ > *ʾɛḥå̊d̲ (40).

b) All accented and word-final vowels are lengthened. *ə is deleted after light syllables, making it completely predictable and no longer phonemic. *ə in newly closed syllables shifts to *a* when adjacent to gutturals or preceding *r, *l, or *n and to *i* elsewhere. In many unstressed syllables ending in a guttural, an epenthetic vowel with the same quality as the preceding vowel is inserted, with compensatory lengthening of the vowel before the guttural.

10.1.2 Examples

1. *burāšum > *burā́šum (1(a)iA1) > *birā́šim (1(a)iA3) > *berā́šem (1(a)iB1) > *berṓšem (1(a)ii) > *berṓše (4(a)iiA1) > *berṓš (4(a)iii) > *bərṓš (4(b)i) > *broš* (8b) ‘juniper’.

2. *qaṭṭilat > *qaṭṭílat (1(a)iA1) > *qiṭṭílat (1(a)iA2) > *qeṭṭélat (1(a)iB1) > *qeṭṭélā (4(a)iB) > *qeṭṭelā́ (5(a)i) > *qeṭṭəlā́ (5(a)ii) > *qeṭṭəlǻ (6(b)ii) > *qiṭṭəlǻ (8(a)i) > *qiṭṭlå* (8b), *pi‹el* third person feminine singular perfect.

3. *muhaqīmum > muhaqḯmum (1(a)iA1) > mihaqḯmim (1(a)iA3) > miqḯmim (1(a)iA4) > meqḯmem (1(a)iB1) > meqḯme (4(a)iiA1) > meqḯm (4(a)iii) > *meqim* (4(b)ii) ‘erecting (m.sg.)’.

4. *bahimma > *bahímma (1(a)iA1) > *bámma (1(a)iA4) > *bámm (4(a)iii) > *bǻmm (6(a)i) > *bǻm (7(b)ii) > *båm* (8b) ‘in them (m.)’.

5. *muhaqṭīlum > *muhaqṭḯlum (1(a)iA1) > *mihaqṭḯlim (1(a)iA3) > *maqṭḯlim (1(a)iA4) > *maqṭḯlem (1(a)iB1) > *maqṭḯle (4(a)iiA1) > *maqṭil* (4(a)iii), *hipʿil* m.sg. participle.

6. *yabniyu > *yabníyu (1(a)iA1) > *yabníyi (1b) > *yabnéye (1(a)iB1) > *yabné́ (2) > *yabné̱ (4(a)iiA2) > *yebné̱ (4(a)iiB4) > *yeḇné̱ (7(b)iii) > *yiḇné̱ (8(a)i) > *yiḇnɛ* (8b) ‘he will build’.

7. *ra›šum > *rá›šum (1(a)iA1) > *rá›šim (1(a)iA3) > *rá›šem (1(a)iB1) > *rā́šem (1(a)iB2) > *rṓšem (1(a)ii) > *rṓše (4(a)iiA1) > *roš* (4(a)iii) ‘head’.

8. *qawamnā > *qawámnā (1(a)iA1) > *qawámnū (1(a)ii) > *qā́mnū (2) > *qámnu* (3) ‘we stood up’.

9. *kurāʿayma > *kurāʿáyma (1(a)iA1) > *korāʿáyma (1(a)iB1) > *korāʿáym (4(a)iA) > *kərāʿáym (5(a)ii) > *kərǻʿáym (6(b)ii) > *kərǻʿā́yim (6(b)iiiB) > *krǻʿáyim* (8b) ‘shins’.

10. *bawuša > *bawúša (1(a)iA1) > *bawóša (1(a)iB1) > *bṓša (2) > *boš* (4(a)iA) ‘he was ashamed’.

11. *bāniyu > *bōniyu (1(a)ii) > *bōniyi (1b) > *bōneye (1(a)iB1) > *bōnē (2) > *bone* (6(a)ii) ‘building (m.sg. construct)’.

12. *qāṭilīma > *qāṭilíma (1(a)iA1) > *qāṭelíma (1(a)iB1) > *qōṭelíma (1(a)ii) > *qōṭelím (4(a)iA) > *qōṭəlím (5(a)ii) > *qoṭlim* (8b), *qal* masculine plural active participle.

13. *śiʿarum > *śiʿárum (1(a)iA1) > *śiʿárim (1(a)iA3) > *śeʿárem (1(a)iB1) > *śeʿáre (4(a)iiA1) > *śeʿáre (4(a)iiB1) > *śeʿár (4(a)iii) > *śēʿár (4(b)ii) > *śeʿår* (6(b)ii) ‘hair’.

14. *qaṭalā > *qaṭálā (1(a)iA1) > *qaṭálū (1(a)ii) > *qāṭálū (4(b)ii) > *qāṭalű (5(a)i) > *qāṭəlű (5(a)ii) > *qå̊ṭəlű (6(b)ii) > *qåṭlu* (8b), *qal* third person feminine plural perfect.

15. *qidmah > *qídmah (1(a)iA1) > *qédmah (1(a)iB1) > *qédmā (4(a)iiB2) > *qédmå̊ (6(b)ii) > *qéḏmå̊ (7(b)iii) > *qéḏmå* (8b) ‘eastwards’.

16. *yaqṭul > *yáqṭul (1(a)iA1) > *yáqṭol (1(a)iB1) > yaqṭól (4(a)iiB3) > *yeqṭól (4(a)iiB4) > > *yiqṭól (8(a)i) > *yiqṭol* (8b), *qal* third person masculine singular jussive.

17. *yaqṭulu > *yaqṭúlu (1(a)iA1) > *yaqṭúli (1b) > *yaqṭóle (1(a)iB1) > *yaqṭól (4(a)iA) > *yeqṭól (4(a)iiB4) > *yiqṭól (8(a)i) > *yiqṭol* (8b), *qal* third person masculine singular imperfect.

18. *naqṭala > *naqṭála (1(a)iA1) > *naqṭál (4(a)iA) > *neqṭál (4(a)iiB4) > *niqṭál (8(a)i) > *niqṭal* (8b), *nipʿal* third person masculine singular perfect.

19. *kabidtī > *kabídtī (1(a)iA1) > *kabédtī (1(a)iB1) > *kabɛ́dtī (4(a)ivB1) > *kābɛ́dtī (4(b)ii) > *kå̊bɛ́dtī (6(b)ii) > *kå̊bádtī (6(b)iiiA) > *kå̊b̲ád̲tī (7(b)iii) > *kåb̲ád̲ti* (8b) ‘I was heavy’.

20. *bintum > *bíntum (1(a)iA1) > *bíntim (1(a)iA3) > *béntem (1(a)iB1) > *bénte (4(a)iiA1) > *bént (4(a)iii) > *bɛ́nt (4(a)ivA1) > *bɛ́tt (4(a)ivA2) > *bátt (6(b)iiiA) > *bát (7(b)ii) > *bát̲ (7(b)iii) > *baṯ* (8b) ‘daughter’.

21. *bɛkyum (from earlier *bakyum; the originally allophonic change of *a to *ɛ in this environment must precede (4(a)ivB2), but is otherwise hard to date) > *bɛ́kyum (1(a)iA1) > *bɛ́kyim (1(a)iA3) > *bɛ́kyem (1(a)iB1) > *bɛ́kye (4(a)iiA1) > *bɛ́ky (4(a)iii) > *bɛ́ki (4(a)ivB1) > *bɛkí (5(a)i) > *bəkí (5(a)ii) > *bəḵí (7(b)iii) > *bḵi* (8b) ‘weeping’.

22. *ʾanī > *ʾánī (1(a)iA1) > ʾā́nī (4(a)ivB2) > ʾǻ*ni* (6(b)ii) ‘I (pause)’.

23. *wayyištaḥwi (the origin of the gemination of the prefix consonant is uncertain) > *wayyištáḥwi (1(a)iA1) > *wayyeštáḥwe (1(a)iB1) > *wayyeštáḥw (4(a)iA) > *wayyeštáḥu (4(a)ivB3) > *wayyištáḥu (8(a)i) > *wayyištáḥu* (8b) ‘and he prostrated himself’.

24. *šawʾum > *šáwʾum (1(a)iA1) > *šáwʾim (1(a)iA3) > *šáwʾem (1(a)iB1) > *šáwʾe (4(a)iiA1) > *šáwʾ (4(a)iii) > *šáw (4(a)ivC) > *šǻw (6(a)i) > *šåw* (8b) ‘falsehood’.

25. *yawmum > *yáwmum (1(a)iA1) > *yáwmim (1(a)iA3) > *yáwmem (1(a)iB1) > *yáwme (4(a)iiA1) > *yáwm (4(a)iii) > *yom* (4(a)ivC2) ‘day’.

26. *mawtum > *máwtum (1(a)iA1) > *máwtim (1(a)iA3) > *máwtem (1(a)iB1) > *máwte (4(a)iiA1) > *máwt (4(a)iii) > *mǻwt (6(a)i) > *må̋wɛt (6(b)iiiB) > *mǻwɛ̱t* (7(b)iii) ‘death’.

27. *dabaray > *dabarē (4(a)ivD) > *dəbərē (5(a)ii) > *dəbərḗ (6(a)ii) > *dəḇərḗ (7(b)iii) > *diḇre* (8b) ‘words (construct)’.

28. *šanatum > šanátum (1(a)iA1) > šanátim (1(a)iA3) > šanátem (1(a)iB1) > šanáte (4(a)iiA1) > šanā́te (4(a)iiB1) > šanā́t (4(a)iiA1) > šanā́ (4(a)ivE) > šānā́ (4(b)ii) > *šånå* (6(b)ii) ‘year’.

29. *ʿamuqīma > *ʿamuqī́ma (1(a)iA1) > *ʿamoqī́ma (1(a)iB1) > *ʿamoqī́m (4(a)iA) > *ʿamoqqī́m (4(b)ii) > ʿă*muqqim* (8(a)i) ‘deep (m.pl.)’.

30. *yaylik > *yáylik (1(a)iA1) > *yáylek (1(a)iB1) > *yḗlek (4(a)ivD) > *yēlék (5(b)i) > *yēléḵ (7(b)iii) > *yeleḵ* (8b) ‘may he go’.

31. *wayyaylik (gemination of uncertain origin) > *wayyáylik (1(a)iA1) > *wayyáylek (1(a)iB1) > *wayyḗlek (4(a)ivD) > *wayyḗlɛk (5(b)ii) > *wayyēlɛ́k (5(b)iii) > *wayyēlɛ́k (5(c)ii) > *wayyēlák (6(b)iiiA) > *wayyeláḵ* (7(b)iii) ‘and he went (pause)’.

32. *wayyīšan (gemination of uncertain origin) > *wayyī́šan (1(a)iA1) > *wayyīšán (5(c)i) > *wayyīšā́n (5(c)ii) > *wayyišǻn* (6(b)ii) ‘and he slept (pause)’.

33. *yabarriku > *yabarríku (1(a)iA1) > *yabarréko (1(a)iB1) > *yabarréke (1b) > *yabarrék (4(a)iA) > *yəbarrék (5(a)ii) > *yəbārék (6(b)i) > *yəbå̄rék (6(a)i) > *yəb̲å̄rék̲ (7(b)iii) > *yb̲åreḵ* (8b) ‘he will bless’.

34. *baʿlum > *báʿlum (1(a)iA1) > báʿlim (1(a)iA3) > *báʿlem (1(a)iB1) > *báʿle (4(a)iiA1) > *báʿl (4(a)iii) > *báʿal* (6(b)iiiB) ‘master’.

35. *kalbum > *kálbum (1(a)iA1) > *kálbim (1(a)iA3) > *kálbem (1(a)iB1) > *kálbe (4(a)iiA1) > *kálb (4(a)iii) > *kā́lɛb (6(b)iiiB) > *kɛ́lɛb (7(a)i) > *kɛ́lɛb̲* (7(b)iii) ‘dog’.

36. *ʿalaykah > *ʿaláykah (1(a)iA1) > *ʿaláykā (4(a)iiB2) > *ʿalékā (4(a)ivD) > *ʿālékā (4(b)ii) > *ʿå̄lékå̄ (6(b)ii) > *ʿå̄lɛ́kå̄ (6(b)iiiC) > ʿ*ålɛ́ḵå* (7(b)iii) ‘on you (m.sg.)’.

37. *zarʿum > *zárʿum (1(a)iA1) > *zárʿim (1(a)iA3) > *zárʿem (1(a)iB1) > *zárʿe (4(a)iiA1) > *zárʿ (4(a)iii) > *zā́rɛʿ (6(b)iiiB) > *zɛ́rɛʿ (7(a)i) > *zɛ́raʿ* (7(a)ii) ‘seed’.

38. *karmillum > *karmíllum (1(a)iA1) > *karmíllim (1(a)iA3) > *karméllem (1(a)iB1) > *karmélle (4(a)iiA1) > *karméll (4(a)iii) > *karmɛ́ll (7(b)i) > *karmɛ́l (7(b)ii) > *karmɛl* (8b) ‘orchard’.

39. *magdalum > *magdálum (1(a)iA1) > *magdálim (1(a)iA3) > *magdálem (1(a)iB1) > *magdále (4(a)iiA1) > *magdā́le (4(a)iiB1) > *magdā́l (4(a)iii) > *magdå̄́l (6(b)ii) > *magd̄å̄́l (7(b)iii) > *megd̄å̄́l (7c) > *mīgdål* (8(a)i) ‘tower’.

40. *ʾaḥḥadum > *ʾaḥḥádum (1(a)iA1) > *ʾaḥḥádim (1(a)iA3) > *ʾaḥḥádem (1(a)iB1) > *ʾaḥḥáde (4(a)iiA1) > ʾaḥḥā́de (4(a)iiB1) > ʾaḥḥā́d (4(a)iii) > ʾaḥḥå̄́d (6(b)ii) > ʾaḥḥå̄́d̲ (7(b)iii) > ʾaḥå̄́d̲ (8(a)ii) > ʾɛ*ḥåd̲* (8(a)iii) ‘one (m.)’.

Bibliography

Abraham, K., & Sokoloff, M. (2011). Aramaic loanwords in Akkadian – a reassessment of the proposals. *Archiv für Orientforschung*, *52*, 22–76.

Al-Jallad, A. (2014). Final short vowels in Gəʿəz, Hebrew *ʾattā*, and the anceps paradox. *Journal of Semitic Studies*, *59*(1), 315–327.

——— (forthcoming). The etymology of ḥatta. In a forthcoming Festschrift for M. C. A. Macdonald.

Albright, A. (2008). Explaining universal tendencies and language particulars in analogical change. In J. Good (Ed.) *Linguistic Universals and Language Change*, chap. 7. Oxford: Oxford University Press.

Albright, W.F. (1934). *The vocalization of the Egyptian syllabic orthography*. New Haven: American Oriental Society.

Alvestad, S., & Edzard, L. (2009). la-ḥšōḇ*, but* la-ḥăzōr*? Sonority, Optimality, and the Hebrew* פ"ח *Forms*. No. 66 in Abhandlungen für die Kunde des Morgenlandes. Wiesbaden: Harassowitz.

Aristar, A.M.R. (1987). The Semitic jussive and the implications for Aramaic. *Maarav*, *4*(2), 157–189.

Arnold, M.A. (2005). *Categorization of the Hitpa'el of Classical Hebrew*. Ph.D. thesis, Harvard University.

Bar-Asher, E.A. (2008). The imperative forms of Proto-Semitic and a new perspective on Barth's law. *Journal of the American Oriental Society*, *128*(2), 233–255.

Barth, J. (1887). Vergleichende Studien. I. Ueber biliterale Nomina. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *41*, 595–638.

——— (1889). Vergleichende Studien. III. Das i-Imperfect im Nordsemitischen. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *43*, 177–214.

——— (1894a). *Die Nominalbildung in den Semitischen Sprachen*. Leipzig: J. C. Hinrichs, second ed.

——— (1894b). Zur vergleichenden semitischen Grammatik. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *48*, 1–21.

——— (1897). Die Pôlēl-Conjugation und die Pôlāl-Partizipien. In G. A. Kohut (Ed.) *Semitic studies in memory of Rev. Dr. Alexander Kohut*, (pp. 83–93). Berlin: S. Calvary & Co.

Bauer, H., & Leander, P. (1922). *Historische Grammatik der hebräischen Sprache des Alten Testamentes*, vol. I: Einleitung, Schriftlehre, Laut- und Formenlehre. Halle an der Saale: Max Niemeyer.

Ben-Ḥayyim, Z. (1955–1977). עברית וארמית נוסח שומרון. Jerusalem: The Academy of the Hebrew Language.

——— (1989). Remarks on Philippi's Law [Hebrew]. *Lešonenu*, *53*(1–2), 113–120.

——— (2000). *A grammar of Samaritan Hebrew*. Winona Lake: Eisenbrauns. With assistance from Abraham Tal.

Ben-David, I. (1993). The alternation *šewa/ṣere* in the present participle [Hebrew]. *Lešonenu*, *57*, 103–108.

Bergsträsser, G. (1918). *Hebräische Grammatik*, vol. I: Einleitung, Schrift- und Lautlehre. Leipzig: Vogel.

——— (1923). Mitteilungen zur hebräischen Grammatik. *Orientalistische Literaturzeitung*, (pp. 253–260, 477–481).

——— (1929). *Hebräische Grammatik*, vol. II: Verbum. Leipzig: Hinrich.

Berko, J. (1958). The child's learning of English morphology. *Word*, *14*, 150–177.

Beyer, K. (1984). *Die aramäischen Texte vom Toten Meer*, vol. 1. Göttingen: Vandenhoek & Ruprecht.

Birkeland, H. (1940). *Akzent und Vokalismus im Althebräischen*. Oslo: Dybwad.

Blake, F.R. (1950). The apparent interchange between a and i in Hebrew. *Journal of Near Eastern Studies*, *9*(2), 76–83.

——— (1951). Pretonic vowels in Hebrew. *Journal of Near Eastern Studies*, *10*, 243–255.

Blau, J. (1970). *On Pseudo-Corrections in Some Semitic Languages*. Jerusalem: The Israel Academy of Sciences and Humanities.

——— (1972). Middle and Old Arabic material for the history of stress in Arabic. *Bulletin of the School of Oriental and African Studies*, *35*(3), 476–484.

——— (1977). Marginalia semitica III. *Israel Oriental Studies*, *7*, 14–32.

——— (1978). Hebrew stress shifts, pretonic lengthening, and segolization: possible cases of Aramaic interference in Hebrew syllable structure. *Israel Oriental Studies*, *8*, 91–106.

——— (1979). Non-phonetic conditioning of sound change and Biblical Hebrew. *Hebrew Annual Review*, *3*, 7–15.

——— (1981). On pausal lengthening, pausal stress shift, Philippi's Law and rule ordering in Biblical Hebrew. *Hebrew Annual Review*, *5*, 1–15.

——— (1982). Remarks on the development of some pronominal suffixes in Hebrew. *Hebrew Annual Review*, *6*, 61–67.

——— (1983). Eine Theorie der Haupttondehnung im Althebräischen. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *133*, 24–29.

——— (1985). Remarks on the chronology of Philippi's Law [Hebrew]. In *Proceedings of the Ninth World Congress of Jewish Studies*. Jerusalem.

——— (1993). *A grammar of Biblical Hebrew*. Wiesbaden: Harassowitz, second ed.

——— (1995). The monophthongization of diphthongs as reflected in the use of vowel letters in the Pentateuch. In Z. Zevit, S. Gitin, & M. Sokoloff (Eds.) *Solving Riddles and Untying Knots: Biblical, Epigraphic, and Semitic Studies in Honor of Jonas C. Greenfield*, (pp. 7–11). Winona Lake: Eisenbrauns.

——— (1996). בעיות בהיסטוריה של הלשון העברית. In *עיונים בבלשנות עברית*, (pp. 25–40). Jerusalem: Magnes.

——— (2010). *Phonology and Morphology of Biblical Hebrew*. Winona Lake: Eisenbrauns.

Bravmann, M.M. (1952). Hebrew *štayim* in the light of Syriac and Turcic. *Proceedings of the American Academy for Jewish Research*, *21*, 1–2.

Brockelmann, C. (1908). *Grundriss der vergleichenden Grammatik der semitischen Sprachen*, vol. I: Laut- und Formenlehre. Berlin: Reuther & Reichard.

Brønno, E. (1943). *Studien über hebräische Morphologie und Vokalismus*. No. XXVIII in Abhandlungen für die Kunde des Morgenlandes. Leipzig: Deutsche Morgenländische Gesellschaft.

——— (1950). Zu den Theorien Paul Kahles von der Entstehung der tiberischen Grammatik. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *100*, 522–565.

Burchardt, M. (1910). *Die altkanaanäischen Fremdworte und Eigennamen im Aegyptischen*. Leipzig: Hinrichs.

Burridge, K. (2013). Nineteenth-century study of sound change from Rask to Saussure. In K. Allan (Ed.) *The Oxford Handbook of the History of Linguistics*, chap. 7, (pp. 141–165). Oxford: Oxford University Press.

Bybee, J.L. (1985). *Morphology*. No. 9 in Typological Studies in Language. Amsterdam: John Benjamins.

——— (2013). Patterns of lexical diffusion and articulatory motivation for sound change. In M.-J. Solé, & D. Recasens (Eds.) *The Initiation of Sound Change*, (pp. 211–234). Amsterdam: John Benjamins.

CAD (1956–2011). *The Assyrian Dictionary of the Oriental Institute of the University of Chicago*. Chicago: Oriental Institute.

Cantineau, J. (1931). De la place de l'accent de mot en hébreu et en araméen biblique. *Bulletin d'Etudes Orientales*, *1*, 81–98.

——— (1937). Une alternance quantitative dans les pronoms suffixes sémitiques. *Bulletin de la Société de Linguistique de Paris*, *38*, 148–164.

Christian, V. (1953). *Untersuchungen zur Laut- und Formenlehre des Hebräischen*. No. 228 in Sitzungsberichte der Österreichische Akademie der Wissenschaften. Philosophisch-historische Klasse. Vienna: Rohrer.

DeCaen, V. (2003). Hebrew sonority and Tiberian contact anaptyxis: the case of verbs *Primæ Gutturalis*. *Journal of Semitic Studies*, *48*(1), 35–46.

Dolgopolsky, A. (1999). *From Proto-Semitic to Hebrew*. Milan: Centro Studi Camito-Semitici.

Dotan, A. (1976). Stress position and vowel shift in Phoenician and Punic. *Israel Oriental Studies*, *6*, 71–111.

Dresher, B.E. (2011). The phoneme. In M. van Oostendorp, C. J. Ewen, E. Hume, & K. Rice (Eds.) *The Blackwell Companion to Phonology*, Blackwell Companions to Linguistics, chap. 11. Malden: Wiley-Blackwell.

Edzard, D.O. (2004). *Geschichte Mesopotamiens*. Munich: C. H. Beck.

Even-Shoshan, A. (1989). *A new concordance of the Bible [Hebrew]*. Jerusalem: Kiryat Sefer.

Fertig, D. (2013). *Analogy and Morphological Change*. Edinburgh Historical Linguistics. Edinburgh: Edinburgh University Press.

Fischer, W. (2002). *Grammatik des klassischen Arabisch*. No. 11 in Porta linguarum orientalium. Wiesbaden: Harassowitz, third ed.

Fisher, R.A. (1922). On the interpretation of χ^2 from contingency tables, and the calculation of P. *Journal of the Royal Statistical Society*, *85*(1), 87–94.

Florentin, M. (2015). Pre-Tiberian Hebrew and the "heavy-syllable law": A different explanation for the elision and lengthening of short vowels in pre-Tiberian Hebrew [Hebrew]. *Lešonenu*, *76*(2–4), 161–176.

Fox, J. (2003). *Semitic Noun Patterns*. No. 52 in Harvard Semitic Studies. Winona Lake: Eisenbrauns.

Friedrich, J., & Röllig, W. (1999). *Phönizisch-punische Grammatik*. No. 55 in Analecta orientalia. Rome: Pontificio Istituto Biblico, third ed.

Garnier, R., & Jacques, G. (2012). A neglected phonetic law: the assimilation of pre-tonic yod to a following coronal in North-West Semitic. *Bulletin of the School of Oriental and African Studies*, *75*(1), 135–145.

Garr, W.R. (1985). On vowel dissimilation in Hebrew. *Biblica*, *66*, 572–579.

——— (1987). Pretonic vowels in Hebrew. *Vetus Testamentum*, *37*(2), 129–153.

——— (1993). The *Niphal* derivational prefix. *Orientalia*, *62*.

Garrett, A. (2008). Paradigmatic uniformity and markedness. In J. Good (Ed.) *Linguistic Universals and Language Change*, chap. 6, (pp. 125–143). Oxford: Oxford University Press.

Ginsberg, H.L. (1939). Two religious borrowings in Ugaritic literature. *Orientalia*, *8*, 317–327.

Goetze, A. (1939). Accent and vocalism in Hebrew. *Journal of the American Oriental Society*, *59*(4), 431–459.

Guy, G.R. (2003). Variationist approaches to phonological change. In B. D. Joseph, & R. D. Janda (Eds.) *The Handbook of Historical Linguistics*, chap. 8, (pp. 369–400). Malden: Blackwell.

Gzella, H. (2011). Northwest Semitic in general. In S. Weninger (Ed.) *The Semitic Languages*, chap. 18, (pp. 425–451). Berlin: De Gruyter.

——— (2013a). Deir ʿAllā. In G. Khan (Ed.) *Encyclopedia of Hebrew Language and Linguistics*, vol. I A–F, (pp. 691–693). Leiden: Brill.

——— (2013b). The linguistic position of Old Byblian. In R. Holmstedt, & A. Schade (Eds.) *Linguistic Studies in Phoenician*, (pp. 170–198). Winona Lake: Eisenbrauns.

——— (2014). Peoples and languages of the Levant during the Bronze and Iron Ages. In M. Steiner, & A. E. Killebrew (Eds.) *The Oxford handbook of the archaeology of the Levant c. 8000-332* BCE, chap. 2, (pp. 24–34). Oxford: Oxford University Press.

——— (2015). *A Cultural History of Aramaic*. No. 111 in Handbook of Oriental Studies. Leiden: Brill.

——— (forthcoming a). Das Hebräische als Sprache Israels und Judas. In H. Niehr, & U. Hübner (Eds.) *Die Sprachen Palästinas*, Abhandlungen des Deutschen Palästina-Vereins. Wiesbaden: Harassowitz.

——— (forthcoming b). Languages: Hebrew, Aramaic, Greek. In G. J. Brook, & C. Hempel (Eds.) *T&T Clark Companion to the Dead Sea Scrolls*, Bloomsbury Companions. New York: Bloomsbury.

Hale, M. (2003). Neogrammarian sound change. In B. D. Joseph, & R. D. Janda (Eds.) *The Handbook of Historical Linguistics*, chap. 7, (pp. 343–368). Malden: Blackwell.

Hartlieb, J. (2011). *Das enklitische Morphem* -n *im Ugaritischen – eine kritische Analyse der Versuche seiner Plausibilisierung mit besonderem Augenmerk auf [ˀ]nˀ >?* -n. Master's thesis, Leiden University.

Harviainen, T. (1977). *On the vocalism of the closed unstressed syllables in Hebrew*. No. 48 in Studia Orientalia. Helsinki: Finnish Oriental Society.

Hasselbach, R. (2004a). Final vowels of pronominal suffixes and independent personal pronouns in Semitic. *Journal of Semitic Studies*, *49*(1), 1–20.

——— (2004b). The markers of person, gender, and number in the prefixes of G-preformative conjugations in Semitic. *Journal of the American Oriental Society*, *124*(1), 23–35.

——— (2005). *Sargonic Akkadian*. Wiesbaden: Harassowitz.

Hetzron, R. (1969). The evidence for perfect **yáqṭul* and jussive **yaqṭúl* in Proto-Semitic. *Journal of Semitic Studies*, *14*(1), 1–21.

——— (1976). Two principles of genetic reconstruction. *Lingua*, *38*(2), 89–108.

Hoch, J.E. (1994). *Semitic words in Egyptian texts of the New Kingdom and Third Intermediate Period*. Princeton: Princeton University Press.

Hoftijzer, J., & Jongeling, K. (1995). *Dictionary of the North-west Semitic inscriptions*. Leiden: Brill.

Huehnergard, J. (1987). *Ugaritic Vocabulary in Syllabic Transcription*, vol. 32 of *Harvard Semitic Studies*. Atlanta: Scholars Press.

——— (1992). Historical phonology and the Hebrew piel. In W. R. Bodine (Ed.) *Linguistics and Biblical Hebrew*, (pp. 209–229). Winona Lake: Eisenbrauns.

——— (1997). *A grammar of Akkadian*. Atlanta: Scholars Press.

——— (2004). Afro-Asiatic. In R. D. Woodard (Ed.) *The Cambridge Encyclopedia of the World's Ancient Languages*, chap. 6, (pp. 138–159). Cambridge: Cambridge University Press.

——— (2005a). Features of Central Semitic. In A. Gianto (Ed.) *Biblical and Oriental Essays in Memory of William L. Moran*, no. 48 in Biblica et Orientalia, (pp. 155–203). Rome: Pontificio Istituto Biblico.

——— (2005b). Reflexes of **qatl* forms in Gəʿəz. In G. Khan (Ed.) *Semitic Studies in Honour of Edward Ullendorff*, (pp. 26–36). Leiden: Brill.

——— (2006). On the etymology of the Hebrew relative *šɛ-*. In S. E. Fassberg, & A. Hurvitz (Eds.) *Biblical Hebrew in Its Northwest Semitic Setting: Typological and Historical Perspectives*, no. 1 in Publication of the Institute for Advanced Studies, (pp. 103–125). Winona Lake: Eisenbrauns.

——— (2012). *An Introduction to Ugaritic*. Peabody: Hendrickson.

——— (2013). Akkadian *e* and Semitic root integrity. *Babel und Bibel*, *7*, 445–475.

Huehnergard, J., & Olyan, S.M. (2013). The etymology of Hebrew and Aramaic *YKL* 'to be able'. *Journal of Semitic Studies*, *58*(1), 13–19.

Huehnergard, J., & Rubin, A.D. (2011). Phyla and waves: Models of classification of the Semitic languages. In S. Weninger (Ed.) *The Semitic Languages*, chap. 9, (pp. 259–278). Berlin: De Gruyter Mouton.

Izre'el, S. (2012). Canaano-Akkadian: Linguistics and sociolinguistics. In R. Hasselbach, & N. Pat-El (Eds.) *Language and Nature: Papers Presented to John Huehnergard on the Occasion of His 60th Birthday*, no. 67 in Studies in Ancient Oriental Civilization, chap. 13, (pp. 171–218). Chicago: The Oriental Institute.

Janssens, G. (1982). *Studies in Hebrew Historical Linguistics Based on Origen's Secunda*. No. 9 in Orientalia Gandensia. Ghent: Peeters.

Jenni, E.S. (1953). *Das Wort olam im Alten Testament*. Berlin: Alfred Töpelmann.

Joüon, P., & Muraoka, T. (2009). *A Grammar of Biblical Hebrew*. No. 27 in Subsidia Biblica. Rome: Gregorian and Biblical Press, second ed. Second reprint, with corrections.

Kahle, P.E. (1947). *The Cairo Geniza*. London: Oxford University Press, first ed.

——— (1959). *The Cairo Geniza*. Oxford: Blackwell, second ed.

Kaufman, S.A. (1984). On vowel reduction in Aramaic. *Journal of the American Oriental Society*, *104*(1), 87–95.

——— (1995). Paragogic *nun* in Biblical Hebrew: Hypercorrection as a clue to a lost scribal practice. In Z. Zevit, S. Gitin, & M. Sokoloff (Eds.) *Solving Riddles and Untying Knots: Biblical, Epigraphic, and Semitic Studies in Honor of Jonas C. Greenfield*, (pp. 95–99). Winona Lake: Eisenbrauns.

Kautzsch, E. (1909). *Wilhelm Gesenius' hebräische Grammatik*. Leipzig: Vogel, 28th ed.

Khan, G. (1987). Vowel length and syllable structure in the Tiberian tradition of Biblical Hebrew. *Journal of Semitic Studies*, *32*(1), 23–82.

——— (2013a). *A Short Introduction to the Tiberian Masoretic Bible and its Reading Tradition*. Gorgias Handbooks. Piscataway: Gorgias Press, second ed.

——— (2013b). Vowel length: Biblical Hebrew. In G. Khan (Ed.) *Encyclopedia of Hebrew Language and Linguistics*, vol. III P–Z, (pp. 981–985). Leiden: Brill.

Kiparsky, P. (1995). The phonological basis of sound change. In J. A. Goldsmith (Ed.) *The Handbook of Phonological Theory*, chap. 21, (pp. 640–670). Oxford: Blackwell.

Knudtzon, J.A. (1915). *Die el-Amarna-Tafeln*. Leipzig: Hinrichs.

Koehler, L., & Baumgartner, W. (1994–2001). *The Hebrew and Aramaic lexicon of the Old Testament*. Leiden: Brill. Subsequently revised by Walter Baumgartner and Johann Jakob Stamm.

Kogan, L. (2011). Proto-Semitic phonetics and phonology. In S. Weninger (Ed.) *The Semitic Languages*, chap. 6, (pp. 54–150). Berlin: De Gruyter Mouton.

Koller, A. (2013). Attenuation. In G. Khan (Ed.) *Encyclopedia of Hebrew Language and Linguistics*, vol. I A–F, (pp. 231–232). Leiden: Brill.

Kootstra, F. (2016). The language of the Taymanitic inscriptions & its classification. *Arabian Epigraphic Notes*, *2*, 67–140.

Kossmann, M.G., & Suchard, B.D. (forthcoming). A reconstruction of the system of verb aspects in proto-Berbero-Semitic.

Labov, W. (1981). Resolving the Neogrammarian controversy. *Language*, *57*(2), 267–308.

Ladefoged, P., & Maddieson, I. (1996). *The Sounds of the World's Languages*. Oxford: Blackwell.

Lambdin, T.O. (1985). Philippi's Law reconsidered. In A. Kort, & S. Morschauser (Eds.) *Biblical and related studies presented to Samuel Iwry*, (pp. 135–145). Winona Lake: Eisenbrauns.

Lambert, M. (1890). L'accent tonique en hébreu. *Revue des Etudes Juives*, *20*, 73–77.

Lane, E.W. (1863–1893). *An Arabic-English Lexicon*. London: Williams and Norgate.

Lehiste, I. (1970). *Suprasegmentals*. Cambridge, Massachusetts: M.I.T. Press.

Leslau, W. (1987). *Comparative dictionary of Geʿez*. Wiesbaden: Harassowitz.

Lettinga, J.P. (2012). *Grammatica van het Bijbels Hebreeuws*. Leiden: Brill, twelfth ed. Revised by M. F. J. Baasten and W. Th. van Peursen.

Macintosh, A.A. (1980). *Isaiah xxi*. Cambridge: Cambridge University Press.

Macuch, R. (1969). *Grammatik des samaritanischen Hebräisch*. Berlin: Walter de Gruyter.

Malone, J.L. (1990). Pretonic lengthening: An early Hebrew sound change. *Journal of the American Oriental Society*, *110*(3), 460–471.

Manfred, D., Loretz, O., & Sanmartín, J. (1995). *The cuneiform alphabetic texts from Ugarit, Ras Ibn Hani and other places*. Münster: Ugarit-Verlag, second ed.

Mankowski, P.V. (2000). *Akkadian Loanwords in Biblical Hebrew*. No. 47 in Harvard Semitic Studies. Winona Lake: Eisenbrauns.

Mercati, G. (1895–1896). D'un palimpsesto Ambrosiano contenente i salmi esapli. *Atti della Reale Accademia delle Scienze di Torino*, *31*, 655ff.

Michaud, A., Jacques, G., & Rankin, R.L. (2012). Historical transfer of nasality between consonantal onset and vowel. *Diachronica*, *29*(2), 201–230.

Moran, W.L. (1960). Early Canaanite *yaqtula*. *Orientalia*, *29*, 130–140.

Müller, W.W. (1974). Zur Herkunft von λίβανος und λιβανωτός. *Glotta*, *52*, 53–59.

Noorlander, P.M. (2012). Sam'alian in its Northwest Semitic setting: A historical-comparative approach. *Orientalia*, *81*(3), 202–238.

——— (2015). The problem of classifying Ugaritic – a study of the debate on the classification of Ugaritic and its relationship to the history of Hebrew. *Kleine Untersuchungen zur Sprache des Alten Testaments und seiner Umwelt*, *20*, 51–91.

Nooteboom, S. (1997). Prosody of speech: Melody and rhythm. In W. J. Hardcastle, & J. Laver (Eds.) *The Handbook of Phonetic Sciences*, (pp. 640–673). Oxford: Blackwell.

Ohala, J.J. (1981). The listener as a source of sound change. In C. S. Masek, R. A. Hendrick, & M. F. Miller (Eds.) *Papers from the Parasession on Language and Behavior*, (pp. 178–203). Chicago: Chicago Linguistic Society.

Pat-El, N. (2009). The development of the Semitic definite article: A syntactic approach. *Journal of Semitic Studies*, *54*(1), 19–50.

Paul, H. (1880). *Prinzipien der Sprachgeschichte*. Halle an der Saale: Max Niemeyer, first ed.

——— (1920). *Prinzipien der Sprachgeschichte*. Halle an der Saale: Max Niemeyer, fifth ed.

Philippi, F.W. (1878). Das Zahlwort Zwei im Semitischen. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, *32*, 21–98.

Posener, G. (1940). *Princes et pays d'Asie et de Nubie*. Brussels: Fondation égyptologique reine Élisabeth.

Qimron, E. (1986a). *The Hebrew of the Dead Sea scrolls*. No. 29 in Harvard Semitic Studies. Atlanta: Scholars Press.

——— (1986b). Interchanges of *e* and *a* vowels in accented closed syllables in Biblical Hebrew [Hebrew]. *Lešonenu*, *50*, 77–102.

——— (1991). Interchangeability of *ṣere* and *pataḥ* in Biblical Hebrew and "Philippi's Law" [Hebrew]. *Lešonenu*, *56*(2), 111–115.

——— (2006). The pausal *pataḥ* in Biblical Hebrew. In S. E. Fassberg, & A. Hurvitz (Eds.) *Biblical Hebrew in Its Northwest Semitic Setting*, (pp. 305–314). Winona Lake: Eisenbrauns.

Qimron, E., & Sivan, D. (1995). Interchanges of *pataḥ* and *ḥiriq* and the attenuation law [Hebrew]. *Lešonenu*, *59*(1), 7–38.

Rabin, C.M. (1960a). התנועות הקטנות בעברית הטברנית. In M. Haran, & B.-Z. Luria (Eds.) ספר טור־סיני, (pp. 169–206). Jerusalem: Qiryat Sefer.

——— (1960b). שמית והשתקפויותיה בעברית ā. *Tarbiẓ*, *30*(2), 99–111.

Rainey, A.F. (1975). Morphology and the prefix-tenses of West Semitized El-'Amarna tablets. *Ugarit-Forschungen*, *7*, 395–426.

——— (1978). The Barth–Ginsberg Law in the Amarna Tablets. *Eretz Israel*, *14*, 8*–13*.

——— (1996). *Canaanite in the Amarna Tablets*. Leiden: Brill.

Renz, J., & Röllig, W. (2003). *Handbuch der althebräischen Epigraphik*, vol. II, part 2. Darmstadt: Wissenschaftliche Buchgesellschaft.

Revell, E.J. (1980). Pausal forms in Biblical Hebrew: their function, origin and significance. *Journal of Semitic Studies*, *25*(2), 165–179.

——— (1981). Syntactic/semantic structure and the reflexes of original short *a* in Tiberian pointing. *Hebrew Annual Review*, *5*, 75–100.

——— (1984). Stress and the *WAW* "consecutive" in Biblical Hebrew. *Journal of the American Oriental Society*, *104*(3), 437–444.

——— (1989). The Tiberian reflexes of short *i in closed syllables. *Journal of the American Oriental Society*, *109*(2).

——— (2012). The occurrence of pausal forms. *Journal of Semitic Studies*, *57*(2), 213–30.

——— (2016). Terminal markers in the Masoretic Text. *Journal of Semitic Studies*, *61*(1), 67–84.

Rubin, A.D. (2001). A note on the conjugation of ל"ה verbs in the derived patterns. *Zeitschrift für Althebraistik*, *14*(1), 34–41.

——— (2005). *Studies in Semitic Grammaticalization*. No. 57 in Harvard Semitic Studies. Winona Lake: Eisenbrauns.

——— (2008). Two peculiarities of niphal participles in Biblical Hebrew. *Journal of Northwest Semitic Languages*, *34*(3), 123–130.

Sáenz-Badillos, A. (1993). *A history of the Hebrew language*. Cambridge: Cambridge University Press. Translated by John Elwolde.

Sampson, G. (2013). A counterexample to homonymy avoidance. *Diachronica*, *30*(4), 579–591.

Sarauw, C. (1939). *Über Akzent und Silbenbildung in den älteren semitischen Sprachen*. No. XXVI, 8 in Historisk-filologiske Meddelelser. Copenhagen: Ejnar Munksgaard.

Sokoloff, M. (2009). *A Syriac Lexicon*. Winona Lake: Eisenbrauns. A translation from the Latin, correction, expansion, and update of C. Brockelmann's *Lexicon Syriacum*.

Steiner, R.C. (1976). On the origin of the *ḥéðɛr* ∼ *ḥăðár* alternation in Hebrew. *Afroasiatic Linguistics*, *3*(5), 85–102.

——— (1979). From Proto-Hebrew to Mishnaic Hebrew: the history of *akh and *ah. *Hebrew Annual Review*, *3*, 157–174.

——— (1982). *Affricated Ṣade in the Semitic Languages*. New York: The American Academy for Jewish Research.

——— (1987). *Lulav* versus **lu/law*: A note on the conditioning of **aw* > *ū* in Hebrew and Aramaic. *Journal of the American Oriental Society*, *107*(1), 121–122.

——— (2001). *Albounout* "frankincense" and *Alsounalph* "oxtongue": Phoenician-Punic botanical terms with prothetic vowels from an Egyptian papyrus and a Byzantine codex. *Orientalia*, *70*, 97–103.

——— (2005). On the dating of Hebrew sound changes (**ḫ* > *ḥ* and **ġ* > *ʿ*) and Greek translations (2 Esdras and Judith). *Journal of Biblical Literature*, *124*(2), 229–267.

——— (2007a). On the monophthongization of **ay* to *ī* in Phoenician and Northern Hebrew and the preservation of archaic/dialectal forms in the Masoretic vocalization. *Orientalia*, *76*, 73–83.

——— (2007b). Variation, simplifying assumptions and the history of spirantization in Aramaic and Hebrew. In A. Maman, S. E. Fassberg, & Y. Breuer (Eds.) *Shaʿarei lashon: studies in Hebrew, Aramaic, and Jewish languages presented to Moshe Bar-Asher*, (pp. 52–65). Jerusalem: Bialik.

——— (2012). Vowel syncope and syllable repair processes in Proto-Semitic construct forms: A new reconstruction based on the law of diminishing conditioning. In R. Hasselbach, & N. Pat-El (Eds.) *Language and Nature: Papers Presented to John Huehnergard on the Occasion of his 60th Birthday*, no. 67 in Studies in Ancient Oriental Civilization, chap. 22, (pp. 365–390). Chicago: The Oriental Institute of the University of Chicago.

Strich, A. (2013). Arabic and the putative Proto-Semitic **qatāl-* infinitive: evidence from the former for a reconsideration of the latter. Conference talk given at 'Arabic in Context', held at Leiden University, 2–3 November 2013.

Suchard, B.D. (2012). *Regularizing the Canaanite Shift*. Master's thesis, Leiden University.

——— (2015). Review of N.J.C. Kouwenberg, *The Akkadian Verb and Its Semitic Background*. *Bibliotheca Orientalis*, *72*(5–6), 712–719.

——— (forthcoming). The Hebrew verbal paradigm of hollow roots: a triconsonantal account. *Zeitschrift der Deutschen Morgenländischen Gesellschaft*.

Testen, D. (1985). The significance of Aramaic $r < *n$. *Journal of Near Eastern Studies*, *44*(2), 143–146.

Tiersma, P.M. (1982). Local and general markedness. *Language*, *58*(4), 832–839.

Tropper, J. (2002). *Altäthiopisch*. Münster: Ugarit-Verlag.

Van der Hulst, H. (2010). Word accent: terms, typologies and theories. In H. van der Hulst, R. Goedemans, & E. van Zanten (Eds.) *A survey of word accentual patterns in the languages of the world*, (pp. 3–53). Berlin: De Gruyter Mouton.

Voigt, R.M. (1987a). The classification of Central Semitic. *Journal of Semitic Studies*, *32*(1), 1–21.

——— (1987b). Die Personalpronomina der 3. Personen im Semitischen. *Die Welt des Orients*, *18*, 49–63.

Von Dassow, E. (2004). Canaanite in cuneiform. *Journal of the American Oriental Society*, *124*(4), 641–674.

Von Soden, W. (1965–1981). *Akkadisches Handwörterbuch*. Wiesbaden: Harassowitz.

——— (1995). *Grundriss der akkadischen Grammatik*. No. 33 in Analecta orientalia. Pontificio Istituto Biblico, third ed.

Wagner, M.H. (1966). *Die lexikalischen und grammatikalischen Aramaismen im alttestamentlichen Hebräisch*. No. 96 in Beihefte zur Zeitschrift für die alttestamentliche Wissenschaft. Berlin: Alfred Töpelmann.

Wells, R. (1951). Predicting slips of the tongue. *The Yale Scientific Magazine*, *26*(3), 9–30. Reprinted in V. A. Fromkin (ed.), *Speech Errors as Linguistic Evidence*, (pp. 82–87). The Hague: Mouton, 1973.

Woodhouse, R. (2004). The Greek prototypes of the city names Sidon and Tyre: Evidence for phonemically distinct initials in Proto-Semitic or for the history of Hebrew vocalism? *Journal of the American Oriental Society*, *124*(2), 237–248.

——— (2007). Redefining Hebrew diachronic phonology. *Journal of the American Oriental Society*, *127*(2), 199–200.

Yu, A. (2006). Sound change: Phonetics. In K. Brown (Ed.) *Encyclopedia of Language & Linguistics*, (pp. 525–528). Amsterdam: Elsevier.

Yuditsky, A.E. (2010). On the quality of unstressed vowels in the vicinity of *r* and other consonants [Hebrew]. *Lešonenu*, *73*(1), 55–68.

Zevit, Z. (1980). Matres Lectionis *in Ancient Hebrew Epigraphs*. American Schools of Oriental Research.

Samenvatting

In de historische taalwetenschap overheerst de opvatting dat klankveranderingen, veranderingen in de uitspraak van woorden in een bepaalde taal of een bepaald dialect, fonetisch regelmatig zijn. Dat wil zeggen dat als een bepaalde klank een verandering ondergaat, bijvoorbeeld van *uu* naar *ui* (zoals in de overgang van het Middelnederlands naar het Nieuwnederlands gebeurd is), deze verandering in principe in elk woord optreedt, ongeacht betekenis of woordsoort. Of zo'n klankverandering in een bepaald geval optreedt, kan dan alleen worden bepaald door de fonetische context, oftewel de andere klanken in het woord, alsmede de klemtoon, positie van de klank in het woord, enzovoort. In het Nederlands is *uu* zodoende bewaard gebleven als er een *r* op volgt, of het nu een zelfstandig naamwoord als *muur* of een werkwoord als *gluur* betreft.

Deze opvatting dat klankveranderingen altijd fonetisch regelmatig optreden, wordt niet gedeeld door veel deskundigen op het gebied van het Bijbels Hebreeuws, de taal van het grootste gedeelte van de Hebreeuwse Bijbel (grotendeels overeenkomend met het christelijke Oude Testament). Bepaalde ontwikkelingen in de voorgeschiedenis van het Bijbels Hebreeuws worden dan ook vaak verklaard aan de hand van niet-fonetisch geconditioneerde klankveranderingen. Klankveranderingen zouden dan in sommige gevallen 'rekening hebben gehouden' met de woordsoort van het al dan niet beïnvloede woord, of met de mogelijke verwarring die op zou kunnen treden als ze doorgevoerd werden. Dit proefschrift onderzoekt de vraag in hoeverre de ontwikkeling van de Bijbels-Hebreeuwse klinkers verklaard kan worden zonder gebruik te maken van niet-fonetisch geconditioneerde klankveranderingen, maar slechts aan de hand van fonetisch regelmatige 'klankwetten' en andere algemeen erkende taalhistorische processen als analogie en ontlening.

Hoofdstuk 1 introduceert de vraagstelling. In paragraaf 1.1.1 wordt de theoretische achtergrond van de eis dat klankwetten fonetisch regelmatig zijn uiteengezet. Daar klankverandering het gevolg is van foutieve verwerving van de fonologie (het systeem van contrastieve klanken) van een taal, kan ze slechts door fonetische factoren geconditioneerd worden. Vervolgens worden het eind- en beginpunt van

het onderzoek geïntroduceerd: het Tiberiënzisch Bijbels Hebreeuws, waarvan de mondeling overgeleverde uitspraak rond de tiende eeuw na de gewone jaartelling in Tiberias is vastgelegd, en het Proto-Noordwest-Semitisch, de gereconstrueerde laatste gemeenschappelijke voorouder van het Hebreeuws en nauwverwante talen als het Aramees en het Ugaritisch. Hoofdstuk 2 bevat een beknopt overzicht van de Bijbels-Hebreeuwse klank- en vormleer en de Proto-Noordwest-Semitische reconstructie daarvan die in de rest van het proefschrift wordt aangehouden.

Hierna behandelt het grootste gedeelte van het proefschrift klankveranderingen waar mogelijk sprake is van niet-fonetische conditionering of die anderszins problematisch zijn. Hoofdstuk 3 behandelt een van de eerste klankveranderingen na het Proto-Noordwest-Semitische stadium, de zogeheten Kanaänitische klankverschuiving. Deze wordt vaak geformuleerd als een verandering van beklemtoonde lange *á in *ó, maar in feite gaat het om een klankverschuiving van *alle* gevallen van Proto-Noordwest-Semitische lange *ā, ook de onbeklemtoonde. Klemtoon speelt ook een grote rol in hoofdstuk 4, dat gaat over de ontwikkeling van het klemtoonsysteem en verscheidene klinkerverlengingen die daarmee samenhangen. Er wordt betoogd dat de klemtoon al in het vroegst reconstrueerbare stadium op de een-na-laatste lettergreep van elk woord lag. De zogeheten klemtoonverlenging, die op het eerste gezicht alleen in naamwoorden lijkt op te treden, blijkt ook fonetisch regelmatig: de verschillende uitwerking op naamwoorden en werkwoorden is te wijten aan de aanwezigheid van een nominale uitgang *-m (de zogeheten mimatie), die ervoor zorgde dat veel klinkers in naamwoorden langer in een open lettergreep stonden dan in vergelijkbare werkwoordsvormen. De conclusies omtrent de zogeheten voorklemtoonverlenging en pausaverlenging betreffen vooral hun relatieve en absolute chronologie.

Hoofdstuk 5 gaat over de ontwikkeling van de halfvocalen *w en *y na klinkers. Een nieuwe bevinding is dat de diftong *aw voor medeklinkers in vrijwel alle gevallen regelmatig wordt samengetrokken tot *ō, een ontwikkeling die voorheen als uitzonderlijk werd gezien. De Bijbels-Hebreeuwse reflexen van de zogeheten triftongen, waarbij *w of *y tussen twee klinkers stond, waren al adequaat beschreven, maar in paragraaf 5.3 wordt hun precieze ontwikkeling op een nieuwe, eenvoudigere manier beschreven en wordt de samenhang daarvan met andere klankveranderingen onderzocht.

Hoofdstukken 6 en 7 behandelen verwante onderwerpen, die soms als twee onderdelen van een en dezelfde klankwet worden gezien: respectievelijk de Wet van Philippi, waarbij beklemtoonde *í in sommige gesloten lettergrepen in *á

verandert, en de Wet van Verdunning, waarbij onbeklemtoonde *a in gesloten lettergrepen juist in *i verandert. Beide klankveranderingen blijken eigenlijk te bestaan uit een groot aantal onafhankelijke klankwetten, waarvan sommige al vroeg na het Proto-Noordwest-Semitisch op zijn getreden en andere juist in de laatste stadia voor het Tiberiënzisch Bijbels Hebreeuws. Interessant is hierbij dat een bepaalde set veranderingen die normaal onder de Wet van Verdunning wordt geschaard, de Tiberiënzische dissimilatie van *maqṭal-nomina en vergelijkbare vormen naar *miqṭål* enz., een voorbeeld zou kunnen zijn van *lexicale diffusie*, waarbij een bepaalde klank zich niet-klankwettig van woord naar woord uitbreidt.

Het laatste hoofdstuk dat een klankwettig probleem behandelt is hoofdstuk 8, dat de ontwikkeling van korte klinkers aan het einde van een woord beschrijft. Normaal zijn deze weggevallen, maar in sommige gevallen zijn ze in het Bijbels Hebreeuws toch aanwezig, vooral in werkwoordsuitgangen en persoonlijk voornaamwoorden. Er wordt betoogd dat het wegvallen van klinkers in deze positie regelmatig is. Gevallen waarin ze zijn blijven staan zijn het gevolg van niet-klankwettige processen als analogie en contaminatie, waarbij de vorm van een woord wordt beïnvloed door die van een ander woord met een verwante betekenis. Hoofdstuk 9 onderzoekt tenslotte de interactie van de verschillende klankwetten en niet-klankwettige processen die in de voorgaande hoofdstukken geïdentificeerd zijn met de verschillende woordklassen van het Proto-Noordwest-Semitisch op weg naar het Bijbels Hebreeuws.

De conclusie (hoofdstuk 10) luidt dat het inderdaad mogelijk is om de ontwikkeling van het Proto-Noordwest-Semitische klinkersysteem naar dat van het Bijbels Hebreeuws met slechts fonetisch geconditioneerde klankwetten te beschrijven. Na een korte samenvatting van de belangrijkste conclusies uit elk hoofdstuk volgt een gecombineerde relatieve chronologie, waarbij de verschillende klankwetten ten opzichte van elkaar in de tijd gesitueerd worden en van voorbeelden worden voorzien.

Curriculum Vitae

Benjamin Derek Suchard was born on April 23rd, 1988, in Toronto, Canada. In 2006, he received his gymnasium diploma from the Kennemer Lyceum in Overveen, the Netherlands. Between 2007 and 2010, he completed a BA in Comparative Indo-European Linguistics at Leiden University, with a minor in Semitic languages. This was followed by the Research Master's programme in Linguistics: Structure and Variation in the Languages of the World, again with a strong focus on Semitics, at the same university. He received his MA there in 2012. All these diplomas were awarded *cum laude*. From 2012 to 2016, he pursued a PhD in Linguistics at the Leiden University Centre for Linguistics under the supervision of prof. dr. H. Gzella and prof. dr. A.M. Lubotsky.