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.