

ANCIENT GREEK ACCENT WINDOWS

Brett HYDE

PhD. Washington University
E-mail: bhyde@artsci.wustl.edu

Brooke HUSIC

Washington University
E-mail: bhusic@go.wustl.edu

Abstract

A significant challenge in metrical stress theory is the restriction of a word accent to a specific window at one edge of the word. In this article, we argue that there are two different types of accent window in Ancient Greek. The first of these is the basic window, which is primarily responsible for restricting the position of word accent in forms without enclitics. The second type is the enclitic window, which restricts the position of word accent in forms with enclitics. We demonstrate that both types can be accounted for under an approach to accent windows based on Relation-Specific Alignment constraints (Hyde 2008, forthcoming).

Keywords

Accent, Alignment, Greek

One of the most interesting problems in metrical stress theory is the restriction of word accent to a window of a particular size at the right or left edge of a form. In Macedonian (Comrie 1976), Maithili (Jha 1940-1944, 1958; Hayes 1995), and Pirahã (Everett and Everett 1984; Everett 1988), for example, accent must occur on one of the three final syllables of a word. In Azkoitia Basque (Hualde 1998) and Kashaya (Buckley 1992, 1994), it must occur on one of the three initial syllables. Though accent windows are found in a number of languages, a general and uniform account has proven elusive. The primary difficulty lies in establishing a domain of the appropriate size. Consider, for example, the trisyllabic accent windows just mentioned. In theories that exclude ternary feet, as most current theories of metrical stress do, there is no prosodic category that regularly consists of three syllables, so there is no prosodic category that might be used to establish a trisyllabic domain directly. Approaches employing devices such as extrametricality or nonfinality (Prince and Smolensky 1993), as well as approaches based on various implementations of lapse avoidance (Kager 1994, Green 1995, Green and Kenstowicz 1995, Gordon 2002, Kager 2005), have failed to provide a general and uniform account.

In this article, we examine two different types of accent window found in Ancient Greek. The Ancient Greek accent windows support an alternative approach that focuses on the size of the gap allowed between the accent and the relevant word edge rather than on the size of the domain itself (Hyde 2008, forthcoming). Under this alternative approach, a stress window consists of a peripheral instance of a prosodic or morphological category and a particular position adjacent to that category. As an initial example, consider again the typical trisyllabic accent window. Since the maximum gap between accent and word edge is two syllables, the standard disyllabic foot is the obvious choice to establish it. As illustrated in (1), languages with initial trisyllabic windows are those that confine accent to a syllable within an initial foot or the syllable adjacent to the initial foot, and languages with final trisyllabic windows are those that confine accent to a syllable within a final foot or the syllable adjacent to the final foot.

(1) Peripheral Feet and the Maximal Gap in Stress Windows

Within the Window

| Initial | Final |
|----------|----------|
| (σès)σσσ | σσσ(σè) |
| (σè)σσσ | σσσ(σèσ) |
| (σ)σèσσ | σσσè(σ) |

Outside the Window

| Initial | Final |
|---------|---------|
| (σ)σèσσ | σσèσ(σ) |
| (σ)σσèσ | σèσσ(σ) |

Windows of different sizes can be created by using different categories to establish the allowable gap between accent and word edge and by using different categories to specify the relevant adjacent position.

Variation along both dimensions—maximum allowable gap and relevant position adjacent to the gap—can be seen in the Ancient Greek accent windows. Ancient Greek words often form a base to which a string of one or more enclitics is attached. When a word occurs without enclitics, it has single high tone. When a word occurs with an enclitic, an additional high tone may occur at the end of the base or at the end of the enclitic itself. The position of the first high tone (the position of the high tone in forms without enclitics) is restricted by what we will refer to as the *basic window*. When the final syllable of the word is light, the high tone may occur on the ultima, as in (2a), the penult, as in (2b,c), or the final mora of the antepenult, as in (2d,e). It is not a truly trisyllabic window, however, because the window does not extend all the way through the antepenult when it happens to be heavy. (In final position, syllables with long vowels, syllables with diphthongs, and syllables closed with two consonants are heavy. In nonfinal position, only syllables with long vowels or diphthongs are heavy.) Example forms are taken from Steriade (1988).

- | | | | |
|-----|----|---------------|------------------------|
| (2) | a. | hodós | 'road' |
| | b. | óikos | 'house' |
| | c. | paidískos | 'little child' |
| | d. | eépreiros | 'continent' |
| | e. | poikilóstolos | 'with variegated prow' |

When the final syllable of the word is heavy, the basic window shrinks. The high tone may occur on the ultima, as in (3a), or the final mora of the penult, as in (3b,c). The window does not extend all the way through the penult when it happens to be heavy.

- | | | | |
|-----|----|-----------|-----------------------|
| (3) | a. | hodóu | 'road-GEN' |
| | b. | patrídoon | 'fatherland-GEN PLUR' |
| | c. | daímoon | 'god-GEN PLUR' |

In terms of the approach outlined above, the basic window in Ancient Greek consists of a final foot and the mora adjacent to the final foot. When the final syllable is light, the final foot is maximally disyllabic, as illustrated in (4), and the high tone may occur as far to the left as the final mora of the antepenult.

- | | | |
|-----|--|----------------|
| (4) | Ancient Greek basic window: final light syllable | |
| | Within the window | |
| | | σ.CV̄V(σ.CV̄è) |
| | | σ.CV̄V(σè.CV) |
| | | σ.CV̄Vè(σ.CV) |
| | Outside the window | |
| | | σ.CV̄èV(σ.CV) |
| | | σè.CV̄V(σ.CV) |

When the final syllable is heavy, however, the final foot is monosyllabic, as illustrated in (5), and the high tone may only occur as far to the left as the final mora of the penult.

(5) Ancient Greek basic window: final heavy syllable

Within the window
 $\sigma.CVV(CVV\grave{e})$
 $\sigma.CVV(CV\grave{e}V)$
 $\sigma.CVV\grave{e}(CVV)$
 Outside the window
 $\sigma.CV\grave{e}V(CVV)$
 $\sigma\grave{e}.CVV(CVV)$

The second window, which we will refer to as the *enclitic window*, arises only when enclitics are present. If the original high tone of the base falls outside this window, under certain circumstances, a second high tone will appear within it. When the enclitic is disyllabic, the enclitic window is effectively trisyllabic. If the original high tone of the base falls to the left of the base-final syllable, a second high tone may appear on the base-final syllable or the enclitic-final syllable, depending on the base's configuration. (It never occurs on the initial syllable of the enclitic for reasons discussed in Section 3.)

- (6) a. *phóos tinos* 'someone's light'
 b. *phílos tinós* 'someone's friend'
 c. *ángelós tinos* 'someone's messenger'

When the enclitic is monosyllabic, the enclitic window is smaller, effectively disyllabic. If the original high tone falls to the left of the base-final syllable, a second high tone may occur on the base-final syllable, depending on the base's configuration. (It never occurs on the monosyllabic enclitic itself for reasons discussed in Section 3.)

- (7) a. *hodós tis* 'some road'
 b. *ángelós tis* 'some messenger'

In terms of the proposed approach, the enclitic window consists of the enclitic and the syllable adjacent to the enclitic. When the enclitic is disyllabic a second high tone may be added if the original falls to the left of the final three syllables. ("e" denotes an enclitic syllable in (8, 9) and throughout the article.)

(8) Ancient Greek enclitic window: disyllabic enclitic

Original high tone within the window
 $\sigma\sigma\grave{e} ee$
 Original high tone outside the window
 $\sigma\sigma\grave{e}\sigma ee\grave{e}$
 $\sigma\grave{e}\sigma\sigma\grave{e} ee$


When the enclitic is monosyllabic, a second high tone may be added when the original falls to the left of the final two syllables.

- (9) Ancient Greek enclitic window: monosyllabic enclitic
 Original high tone within the window
 σσè e
 Original high tone outside the window
 σèσσè e

Having outlined the basic characteristics of the Ancient Greek accent windows and having introduced the configurations that define them, we next introduce the core components of the analysis. In Section 1, we introduce the Weak Bracketing (Hyde 2001, 2002) approach to prosodic and metrical structure. We then outline the general formulation for Relation Specific Alignment (RSA; Hyde 2008, forthcoming) constraints and introduce the particular versions that establish the Ancient Greek accent windows. We present the analysis of the basic window in Section 2 and the analysis of the enclitic window in Section 3. Section 4 contains a summary and concluding remarks.

Section 1 Constraints and Structural Assumptions

In the analysis of the Ancient Greek accent below, we adopt the Weak Bracketing approach to prosodic and metrical structure. In its assumptions concerning the possible relationships between prosodic categories, the Weak Bracketing approach differs in two ways from the more familiar Weak Layering (Itô and Mester 1992) approach adopted in most recent accounts of metrical stress. First, where the Weak Layering approach requires proper bracketing—it does not allow prosodic categories of the same level to overlap—the Weak Bracketing approach tolerates improper bracketing. In particular, feet are allowed to overlap so that they share a syllable, as in (10).

- (10) Overlapping feet
 σ σ σ


Second, where the Weak Layering approach tolerates underparsing—it tolerates instances of prosodic categories on one level that are not parsed into prosodic categories on the next level higher—the Weak Bracketing approach requires exhaustive parsing. In particular, all syllables must be parsed into feet; they cannot be incorporated directly into the prosodic word.

The Weak Bracketing approach also departs from standard assumptions about the relationship between feet and stress. While it is standardly assumed, following Selkirk (1980), that there is a one to one correspondence between feet and stress, the Weak Bracketing approach assumes that feet can remain stressless and that they can even share a stress when they happen to over-

lap. Note that the Weak Bracketing approach maintains a distinction between *stress* and *head*. A stress is an entry at the appropriate level of the metrical grid, where a head is the most prominent constituent of a prosodic category. Though a foot may occur without a stress (without a grid entry at the foot level), it may not occur without a head syllable. When stress is present, however, the stressed syllable must also be a head. In (11) and throughout the article, heads are denoted with vertical association lines.

- (11) a. Stressed trochee b. Stressless trochee
- | | |
|-----|-----|
| x | |
| σ σ | σ σ |
| / | / |

The structural assumptions outlined above are crucial to the proposed analysis of Ancient Greek accent in several respects. Though the Ancient Greek accent was tonal, we assume, following Steriade (1988), that the high tone corresponds to a word-level stress. This assumption allows us to account for restrictions on the proximity of accents in terms of clash avoidance. To capture the connection between word-level stress and high tone, we assume that the following constraint is undominated in Ancient Greek.

- (12) x_{ω} -HIGH-TONE: Every prosodic word-level grid entry corresponds to a high tone.

Most of the constraints responsible for positioning the accent are constraints that refer directly to word-level stress rather than the associated high tone.

In accounting for the Ancient Greek accent windows, two feet are especially important in each form: the final foot, as this is the foot that helps to establish the maximal gap between primary stress and the right edge of the word in the basic window, and the head foot, the foot that actually contains the primary stress and its associated high tone. When the two are distinct, we assume that the final foot is stressless, as there is no evidence for secondary stresses in this position. We also assume that the head foot and the final foot overlap, as in (13), when both are disyllabic.

- (13) Overlapping head foot and final foot
- | | |
|-----------|---|
| x | |
| x | |
| ... σ σ σ | |
| / | / |

We turn next to the general formulation of Relation-Specific Alignment constraints and to the particular RSA constraints that establish the Ancient Greek accent windows.

Section 1. 2 Relation-Specific Alignment

In the proposed analysis, accent windows emerge as restrictions imposed by Relation Specific Alignment constraints. In the RSA approach to alignment, alignment constraints have two components, separated by a slash, as in the general schemas in (14). The set of categories to the left of the slash defines a locus of violation. The configuration to the right of the slash defines a prohibited configuration of misalignment. A single violation mark is assessed whenever instances of the categories specified in the locus of violation to the left of the slash occur in the prohibited configuration to the right of the slash. In each of the three schemas, the prohibited configuration is one where a separator category, *SCat*, intervenes between an edge of the first aligned category, *ACat1*, and an edge of the second aligned category, *ACat2*.

- (14) Alignment constraint schemas
- a. Left-edge: $*\langle ACat1, ACat2, (SCat) \rangle / [\dots SCat \dots ACat2 \dots]_{ACat1}$
 ‘Assess a violation mark for every $\langle ACat1, ACat2, (SCat) \rangle$ such that *SCat* precedes *ACat2* within *ACat1*.’
 - b. Right-edge: $*\langle ACat1, ACat2, (SCat) \rangle / [\dots ACat2 \dots SCat \dots]_{ACat1}$
 ‘Assess a violation mark for every $\langle ACat1, ACat2, (SCat) \rangle$ such that *ACat2* precedes *SCat* within *ACat1*.’
 - c. Opposite-edge: $*\langle ACat1, ACat2, (SCat) \rangle / ACat1 \dots SCat \dots ACat2$
 ‘Assess a violation mark for every $\langle ACat1, ACat2, (SCat) \rangle$ such that *ACat1* precedes *ACat2* with *SCat* intervening.’

Because it prohibits *SCat* from intervening between the left edges of *ACat1* and *ACat2*, (14a) requires alignment of left edges. Because it prohibits *SCat* from intervening between the right edges of *ACat1* and *ACat2*, (14b) requires alignment of right edges. Finally, because it prohibits *SCat* from intervening between the right edge of *ACat1* and the left edge of *ACat2*, (14c) requires alignment of opposite edges.

Notice that both of the aligned categories are always included in the definition of a locus of violation, but the separator category is only optionally included. The optionality of the separator category allows the RSA approach to limit itself to categorical evaluation, where a single violation mark is assessed for each locus of violation, while still providing the grammar with both distance-insensitive and distance-sensitive alignment constraints. When an alignment constraint omits the separator category from the locus of violation, violation assessment is distance-insensitive. The constraint identifies pairs of misaligned categories and assesses a single violation mark for each pair, regardless of the number of separator categories that intervene. When the locus

of violation includes the separator category, violation assessment is distance-sensitive. The constraint looks for triplets consisting of two misaligned categories plus an intervening separator category and assesses a violation mark for each triplet. The number of violation marks assessed overall is equal to the number of separator categories intervening between each pair of misaligned edges.

Section 1.3 Window Constraints

The constraints primarily responsible for establishing stress windows are distance-insensitive opposite-edge RSA constraints. For the Ancient Greek accent windows in particular, the relevant constraints are BASIC-WINDOW and ENCLITIC-WINDOW, given in (15). The BASIC-WINDOW constraint is violated whenever a mora intervenes between a prosodic word-level grid entry, “ x_w ”, and the head syllable of a foot, “ σ_{Hd} ” to its right. The ENCLITIC-WINDOW constraint is violated whenever a syllable intervenes between a primary stress and an enclitic, “*Enc*”, to its right.

- (15)
- a. BASIC-WINDOW: $*\langle x_w, s_{Hd} \rangle / x_w \dots \mu \dots \sigma_{Hd}$
 ‘Assess a violation mark for every $\langle x_w, \sigma_{Hd} \rangle$ such that x_w precedes s_{Hd} with μ intervening.’
 - b. ENCLITIC-WINDOW: $*\langle x_w, Enc \rangle / x_w \dots \sigma \dots Enc$
 ‘Assess a violation mark for every $\langle x_w, Enc \rangle$ such that x_w precedes *Enc* with s intervening.’

To illustrate how the two constraints establish stress windows, consider first the preferences of BASIC-WINDOW. Since BASIC-WINDOW is violated whenever a mora intervenes between a primary stress and a head syllable to its right, the maximal gap that can occur between primary stress and word edge depends on the position of the head syllable within the final foot. When the penult is the head syllable of the final foot, as in (16), the maximal gap is disyllabic. The primary stress can occur on the penult or the final mora of the antepenult. Note that it cannot occur over the ultima in this situation, because primary stress must occur over a head syllable, and the ultima is not a head. (To emphasize how the window is established, only the positions of the final foot and the head foot are shown in (16, 17).)

| (16) | ...σ.CVV.σσ | Basic-Window |
|------|---|--------------|
| | a. σ CVV σ σ x x / | |
| | b. σ CVV σ σ x x / | |
| | c. σ CVV σ σ x x / | *! |
| | d. σ CVV σ σ x x / / | *! |

If the ultima is the head syllable of the final foot, as in (17), the maximal gap is monosyllabic. The primary stress can occur on the ultima, or the final mora of the penult.

| (17) | ...σ.CVV.σ | Basic-Window |
|------|--|--------------|
| | a. σ CVV σ x x | |
| | b. σ CVV σ x x | |
| | c. σ CVV σ x x | *! |
| | d. σ CVV σ x x / | *! |

Next consider the preferences of ENCLITIC-WINDOW. Since ENCLITIC-WINDOW is violated whenever a syllable intervenes between the primary stress and an enclitic to its right, the maximal gap between primary stress and edge

depends on the size of the enclitic. When the enclitic is disyllabic, as in (18), the maximal gap between stress and edge is also disyllabic, and ENCLITIC-WINDOW allows the primary stress to occur on any one of the final three syllables. (To emphasize how the window is established, only the head foot is shown in (18, 19).)

| | | |
|------|--|-----------------|
| (18) | ...σσ ee | Enclitic-Window |
| | <pre> x x a. σ σ e e </pre> | |
| | <pre> x x b. σ σ e e ✓ </pre> | |
| | <pre> x x c. σ σ e e ✓ </pre> | |
| | <pre> x x d. σ σ e e ✓ </pre> | *! |

When the enclitic is monosyllabic, as in (19), the maximal gap is also monosyllabic. ENCLITIC-WINDOW allows the primary stress to occur on either of the final two syllables.

| | | |
|------|--|-----------------|
| (19) | ...σσσ e | Enclitic-Window |
| | <pre> x x a. σ σ σ e </pre> | |
| | <pre> x x b. σ σ σ e ✓ </pre> | |
| | <pre> x x c. σ σ σ e ✓ </pre> | *! |

To this point, then, we have introduced the structural assumptions of Weak Bracketing, the general formulation of RSA constraints, and the particu-

lar RSA constraints responsible for establishing the Ancient Greek accent windows. We turn now to the proposed analysis of the Ancient Greek accent pattern. Additional assumptions and constraints will be introduced at the most relevant points in the analysis.

Section 2: The basic window

Recall that the basic stress window in Ancient Greek is the domain in which accent can occur in forms without enclitics. The size of the domain depends on the weight of the word-final syllable. When the ultima is light, containing a single short vowel and closed by at most a single consonant, the high tone may fall on the ultima, as in (20a), the penult, as in (20b,c), or the final mora of the antepenult, as in (20d-g). It may not occur further to the left than the final mora of the antepenult.

- | | | | |
|------|----|---------------|------------------------|
| (20) | a. | hodós | ‘road’ |
| | b. | óikos | ‘house’ |
| | c. | paidískos | ‘little child’ |
| | d. | ánthroopos | ‘man’ |
| | e. | ángelos | ‘messenger’ |
| | f. | eépreiros | ‘continent’ |
| | g. | poikilóstolos | ‘with variegated prow’ |

When the ultima is heavy, containing a long vowel or diphthong or closed by two consonants, the basic window shrinks by a syllable, the high tone may fall on the ultima, as in (21a,b), or the final mora of the penult, as in (21c,d). It may not occur further to the left than the final mora of the penult.

- | | | | |
|------|----|-----------|-----------------------|
| (21) | a. | boteér | ‘herdsman’ |
| | b. | hodóu | ‘road-GEN’ |
| | c. | patrídoon | ‘fatherland-GEN PLUR’ |
| | d. | daímoon | ‘god-GEN PLUR’ |

While the accent in verb forms is typically recessive—it occurs as far to the left within the basic window as possible—the accent in noun forms can be either recessive or inherent, located on a particular affix or on the root just before the derivational affix. Inherent accents are also subject to the basic window. When an inherent accent would fall outside the basic window, it shifts from its underlying position to the leftmost position within the window.

- (22) iskhuurótatoon → iskhuurotátoon ‘the most powerful-GEN PLUR’

Having reviewed the key generalizations concerning the basic window in Ancient Greek, we turn next to the proposed analysis.

Introduced in Section 1.3, the BASIC-WINDOW constraint is responsible for establishing the basic accent window in Ancient Greek. Since it prohibits a mora from intervening between the primary stress and a head syllable to its right, the primary stress can occur no further to the left than the mora adjacent to the head syllable of the final foot. The distance that can occur between the primary stress and the right edge of the word, then, depends on the position of the head syllable. If the head syllable of the final foot is penultimate, then two syllables can separate the primary stress from the right edge of the word. If the head syllable is ultimate, however, then only a single syllable may separate the primary stress from the right edge. The position of the head syllable is determined by the interaction of two constraints, WEIGHT-TO-HEAD, which requires heavy syllables to be the head syllables of feet, and x_{ω} -LEFT, which draws primary stress as far to the left as possible.

- (23) a. WEIGHT-TO-HEAD: Every bimoraic syllable is the head syllable of a foot.
- b. x_{ω} -LEFT: $*\langle \omega, x_{\omega}, \sigma \rangle / [\dots \sigma \dots x_{\omega} \dots]_{\omega}$
 ‘Assess a violation mark for every $\langle \omega, x_{\omega}, \sigma \rangle$ such that σ precedes x_{ω} within ω .’

The ranking appropriate for the basic window positions WEIGHT-TO-HEAD with BASIC-WINDOW above x_{ω} -LEFT: WEIGHT-TO-HEAD, BASIC-WINDOW >> x_{ω} -LEFT.

The tableau in (24) illustrates the results of the ranking for recessive forms with a light ultima: the basic window expands to its maximum size, allowing the primary stress (and its associated high tone) to fall on the antepenult. The two constraints most active in producing this result are BASIC-WINDOW and x_{ω} -LEFT. BASIC-WINDOW prevents the primary stress from occurring further to the left than the mora adjacent to the final foot. This is true whether the final foot is disyllabic, as in (24d), or monosyllabic, as in (24e). Since the ultima is light, however, there is no need to make it a head syllable to satisfy WEIGHT-TO-HEAD. This allows x_{ω} -LEFT not only to draw the primary stress as far to the left within the basic window as possible but also to insist that the head syllable of the final foot occur as far to the left as possible, expanding the foot that defines the gap between stress and edge to its maximum size. In other words, it not only excludes candidates (24a,b), where the primary stress occurs within the final foot rather than on the adjacent mora, but it also excludes candidate (24c), where the final foot is monosyllabic, rather than the disyllabic maximum. Candidate (24w), which minimally violates x_{ω} -LEFT while remaining within the largest possible basic window, emerges as the winner.

(24)

| poikilostolos | Weight-to-Head | Basic-Window | x_{ω} -Left |
|---|----------------|--------------|--------------------|
| <pre> x x w. poi ki lo sto los / / </pre> | 0 | 0 | 2 |
| <pre> x x a. poi ki lo sto los / </pre> | 0 | 0 | 3 W |
| <pre> x x b. poi ki lo sto los </pre> | 0 | 0 | 4 W |
| <pre> x x c. poi ki lo sto los </pre> | 0 | 0 | 3 W |
| <pre> x x d. poi ki lo sto los / / </pre> | 0 | 1 W | 1 L |
| <pre> x x e. poi ki lo sto los / </pre> | 0 | 1 W | 2 |

In the tableau in (25), we see the results for recessive forms with a heavy ultima: the basic window shrinks, forcing the main stress to fall on the penult. In this case, WEIGHT-TO-HEAD insists that the ultima be a head syllable. It prevents the final foot from expanding to include the penult, as in (25c), effectively restricting the maximum gap between stress and edge to a single syllable. Since the final foot must be monosyllabic, BASIC-WINDOW prevents the primary stress from occurring to the left of the mora adjacent to the final syllable, as in (25b). Finally, x_{ω} -Left draws the primary stress as far to the left within the basic window as possible; it excludes candidate (25a), where the primary stress occurs within the final foot, allowing candidate (25w), where the primary stress is adjacent to the final foot, to emerge as the winner.

(25)

| lipothriks | Weight-to-Head | Basic-Window | x_{ω} -Left |
|--|----------------|--------------|--------------------|
| <pre> x x w. li po thriks </pre> | 0 | 0 | 1 |
| <pre> x x a. li po thriks </pre> | 0 | 0 | 2 W |
| <pre> x x b. li po thriks / </pre> | 0 | 1 W | 0 L |
| <pre> x x c. li po thriks / / </pre> | 1 W | 0 | 0 L |

To this point, then, we have seen how BASIC-WINDOW restricts the position of the primary stress to the appropriate size window at the right edge of the word, how WEIGHT-TO-HEAD has the effect of shrinking the window in forms with a heavy ultima, and how x_{ω} -LEFT can draw the primary stress as far to the left within the window as possible. There are two additional constraints, however, whose influence on accent placement can be seen in a number of forms.

- (26)
- a. FIRST-MORA: In a stressed syllable, the foot-level gridmark occurs on the leftmost mora.
 - b. IO-FAITH- x_{ω} : Every prosodic word-level grid entry in the input occurs in the same position in the output.

When a syllable is stressed, FIRST-MORA insists that stress occur on the syllable's initial mora. The preference is well-motivated. In most languages, a syllable's most sonorous segment is associated with the initial mora, at least in cases where sonority distinctions can be made. In the case of Ancient Greek, in particular, the preference is reflected in the default position of the accent in recessive forms that are not actually long enough to contain a stress window of the largest possible size. In the form *óikos* 'house', for example, the ultima is light, and the basic window would extend through the final mora of the antepenult, if there were a sufficient number of syllables. Since *óikos* contains only two syllables, the accent can only occur as far left as the penult, and it always occupies the initial mora in such cases. Similarly, in the form *phóos* 'light', the ultima is heavy, and the basic window would extend through the final mora of

the penult, if there were a sufficient number of syllables. Since *phóos* has only a single syllable, the accent must occur on the ultima, where it occupies the initial mora.

When a form with recessive accent has a sufficient number of syllables that the basic window can extend to its maximum possible size, the accent always occurs on the final mora of the syllable at the edge of the window—the final mora of the antepenult when the ultima is light and the final mora of the penult when the ultima is heavy. This indicates that the preferences of FIRST-MORA are subject to those of both BASIC-WINDOW and x_{ω} -LEFT. The appropriate ranking, then, is BASIC-WINDOW >> x_{ω} -LEFT >> FIRST MORA. (The ranking BASIC-WINDOW >> x_{ω} -LEFT was established in the tableaux in (24, 25) above.)

Consider the form *anthrópoon* ‘man-GEN PLUR’ in the tableau in (27). Since the ultima is heavy, WEIGHT-TO-HEAD requires that it be a head syllable. (The tableau only contains candidates where WEIGHT-TO-HEAD is satisfied.) As expected, the interaction between BASIC-WINDOW and x_{ω} -LEFT results in accent on the final mora of the penult. While FIRST-MORA would prefer that the primary stress move one mora to the left or one mora to the right, so it can fall on a syllable-initial mora, these options are ruled out by the higher ranked constraints. Moving the accent one mora to the left, as in candidate (27b), violates BASIC-WINDOW. Moving the accent one mora to the right, as in candidate (27a), incurs an extra violation of x_{ω} -LEFT.

| (27) | anthroopoon | BASIC-WINDOW | x_{ω} -LEFT | FIRST-MORA |
|------|---|--------------|--------------------|------------|
| | <p style="text-align: center;">x x ☐ w. an throo poon </p> | 0 | 1 | 1 |
| | <p style="text-align: center;">x x a. an throo poon </p> | 0 | 2 W | 0 L |
| | <p style="text-align: center;">x x b. an throo poon </p> | 1 W | 1 | 0 L |

IO-Faith- x_{ω} is the constraint responsible for preserving inherent accents on the surface. It requires that an underlying specified primary stress maintain its position in the output. Since inherent accents only maintain their position when they occur inside the basic window, and default to the innermost position within the window when they do not, it is necessary to rank the constraints that establish the window and its size—Basic-Window and Weight-to-Head—above IO-Faith- x_{ω} .

Consider the derivation of *iskhuurotátoon* ‘the most powerful-gen plur’ in the tableau in (28). Candidates (28a,b) are faithful to the position of the inherent accent, which occurs over the antepenult, but are excluded by the constraints establishing the basic window. Since the ultima is heavy in this case, Weight-to-Head requires that it be a head syllable. It excludes candidate (28b), which satisfies Basic-Window by making the penult the head of the final foot rather than the ultima. Candidate (28a) satisfies Weight-to-Head, but it is excluded by Basic-Window because its accent occurs to the left of the mora adjacent to the final foot. Although candidate (28w) violates IO-Faith- x_ω by shifting the primary stress to the penult, it falls within the basic window established by the higher-ranked constraints and emerges as the winner. Note that the accent’s position on the penult rather than the ultima is due to x_ω -Left, which, as we shall see just below, actually ranks below IO-Faith- x_ω .

| (28) | iskhuurótatoon | Weight-to-Hd | Basic-Wind | IO-Faith- x_ω |
|------|---|--------------|------------|----------------------|
| | <p style="text-align: center;">x x □ w. is khuu ro ta toon </p> | 0 | 0 | 1 |
| | <p style="text-align: center;">x x a. is khuu ro ta toon / </p> | 0 | 1 W | 0 L |
| | <p style="text-align: center;">x x b. is khuu ro ta toon / /\</p> | 1 W | 0 | 0 L |

To complete this part of the analysis, it is necessary to determine the rankings that allow an underlying primary stress to maintain its position on the surface when it occurs within the basic window. The necessary ranking is IO-FAITH- x_ω >> x_ω -LEFT >> FIRST-MORA. Consider the derivation of *boteér* ‘herdsman’. Since the form contains a heavy ultima, the basic window extends only through the final mora of the penult. As (29) indicates, ranking IO-FAITH- x_ω above x_ω -LEFT prevents the latter from shifting the inherent primary stress as far to the left as possible within the basic window, in this case, shifting it from the ultima to the penult, as in (29b). Ranking IO-FAITH- x_ω above FIRST-MORA prevents the inherent primary stress from shifting to a syllable-initial mora, in this case, from the final to the initial mora of the ultima, as in (29a). Candidate (29w), where the primary stress maintains its underlying position, emerges as the winner. (We showed previously in (27) that x_ω -LEFT must dominate FIRST-MORA.)

(29)

| boteér | IO-FAITH- x_ω | x_ω -LEFT | FIRST-MORA |
|--|----------------------|------------------|------------|
| $\begin{array}{c} x \\ x \\ \square \text{ w. bo teer} \\ \end{array}$ | 0 | 1 | 1 |
| $\begin{array}{c} x \\ x \\ \text{a. bo teer} \\ \end{array}$ | 1 W | 1 | 0 L |
| $\begin{array}{c} x \\ x \\ \text{b. bo teer} \\ \quad \end{array}$ | 1 W | 0 L | 0 L |

To this point, we have established the rankings necessary for creating and enforcing the basic accent window in Ancient Greek. They are summarized in (30).

(30) WEIGHT-TO-HEAD, BASIC WINDOW >> IO-FAITH- x_ω >> x_ω -LEFT >> FIRST-MORA

Ranking WEIGHT-TO-HEAD and BASIC-WINDOW above IO-FAITH- x_ω and x_ω -LEFT confines primary stress to an accent window at the right edge of the word, whether the accent is inherent or recessive. The window consists of a single foot plus an adjacent mora, but the size of the foot can vary, due to WEIGHT-TO-HEAD, depending on the weight of the final syllable. When the final syllable is light, the final foot can be disyllabic, and the primary stress can occur as far to the left as the final mora of the antepenult. When the final syllable is heavy, however, the final foot must be monosyllabic, and the primary stress can only occur as far to the left as the final mora of the penult.

Section 3: The enclitic window

In this section, we analyze the various ways in which an enclitic can affect the location and presence of accent in Ancient Greek. We examine cases in which an additional high tone is placed on the base to which the enclitic is attached, cases in which an additional high tone is placed on the enclitic itself, and cases in which the addition of the enclitic yields no additional high tone.

Recall from Section 1.3 that the enclitic window differs from the basic window both in the category that defines the maximum size of the domain between accent and edge and in the category that defines the position that counts as adjacent to that domain. Where the foot defined the maximum distance between stress and edge in the basic window, via its head syllable, and the mora defined the relevant adjacent position, the enclitic defines the maximum distance in the enclitic window and the syllable defines the relevant

adjacent position. The enclitic window, then, consists of an enclitic and the syllable of the base adjacent to the enclitic.

When the original high tone of the base falls outside the enclitic window, a second high tone may occur on the final syllable of the base or the final syllable of a disyllabic enclitic. (We discuss the circumstances in which it fails to occur in either position just below.) The preference seems to be for the new high tone to fall on the final syllable of the base, as in (31), and it will do so unless it would be on the mora adjacent to the original high tone, as in (32a), would occur on a heavy base-final syllable, as in (32b), or both, as in (32c). In these situations, the new high tone occurs on the second syllable of a disyllabic enclitic.

- (31)
- | | | |
|----|----------------|-----------------------|
| a. | óikós tis | ‘some house’ |
| b. | óikós tinos | ‘someone’s house’ |
| c. | eépeirós tis | ‘some continent’ |
| d. | eépeirós tinos | ‘someone’s continent’ |
| e. | ángelós tis | ‘some messenger’ |
| f. | ángelós tinos | ‘someone’s messenger’ |

- (32)
- | | | |
|----|----------------|---------------------|
| a. | phílos tinós | ‘someone’s friend’ |
| b. | phóiniks tinós | ‘someone’s phoenix’ |
| c. | daímoon tinós | ‘someone’s god’ |

No new high tone is added when the original high tone already occurs within the enclitic window, as in (33), or when it cannot occur on the final syllable of the base and the enclitic is monosyllabic, as in (34). The circumstances in which a new high tone cannot occur on a base-final syllable are the same as those mentioned above. The new high tone would be on the mora adjacent to the original high tone, as in (34a); the new high tone would occur on a base-final heavy syllable, as in (34b); or both, as in (34c). Unlike the situation with disyllabic enclitics, however, a new high tone cannot occur on a monosyllabic enclitic, so the second high tone is absent altogether.

- (33)
- | | | |
|----|-------------|-------------------|
| a. | phóos tis | ‘some light’ |
| b. | phóos tinos | ‘someone’s light’ |
| c. | hodós tis | ‘some road’ |
| d. | hodós tinos | ‘someone’s road’ |

- (34)
- | | | |
|----|--------------|----------------|
| a. | phílos tis | ‘some friend’ |
| b. | phóiniks tis | ‘some phoenix’ |
| c. | daímoon tis | ‘some god’ |

In the discussion that follows, we examine the constraint rankings responsible for introducing or omitting an additional high tone when an enclitic is added to a base form. We consider first the core constraints that establish enclitic window. We then consider the rankings that determine the position of any additional high tone. Finally, we consider the circumstances that result in an additional high tone being omitted. Additional key constraints will be introduced at relevant points in the analysis.

Section 3.1 Establishing the enclitic window

The key assumption in our analysis of base + enclitic combinations is that the addition of a second high tone indicates a shift in the position of the word-level stress. The prosodic word-level gridmark shifts from its original position, leaving the original high tone in place, and the undominated constraint x_ω -H-TONE ensures that a new high tone accompanies the word-level stress in its new position. The constraint that is violated when the prosodic word-level gridmark shifts from its original position is the output-output faithfulness constraint OO-FAITH- x_ω , given in (35).

- (35) OO-FAITH- x_ω : Every prosodic word-level grid entry in the base form occurs in the same position in the derived form.

Main stress shift is triggered when the original main stress falls outside the enclitic window, indicating that ENCLITIC-WINDOW, repeated in (36), dominates OO-FAITH- x_ω .

- (36) ENCLITIC-WINDOW: $*\langle x_\omega, Enc \rangle / x_\omega \dots \sigma \dots Enc$
 'Assess a violation mark for every $\langle x_\omega, Enc \rangle$ such that x_ω precedes Enc with σ intervening.'

To illustrate, consider the derivation of *ángelós tinos* 'someone's messenger' in (37). The base form, *ángelos*, has its primary stress on its antepenultimate syllable, placing it two syllables outside the enclitic window when *tinos* is attached. The candidate that maintains the primary stress in its original position in the base + enclitic form, candidate (37l), violates ENCLITIC-WINDOW and is excluded. Candidate (37w) shifts the primary stress to the innermost syllable of the enclitic window. Though it violates OO-FAITH- x_ω , it satisfies the higher-ranked ENCLITIC-WINDOW and emerges as the winner.

(37) Base output: ángelos Derived output: ángelos tinos

| angelos tinos | Enclitic-Window | OO-Faith- x_{ω} |
|---|-----------------|------------------------|
| <div style="text-align: center;"> x x x ☐ w. an ge los ti nos / / / </div> | 0 | 1 |
| <div style="text-align: center;"> x x l. an ge los ti nos / / / </div> | 1 W | 0 L |

When main stress shift occurs, as in (37), the high tone of the original main stress is preserved in its original position and a new high tone accompanies the new main stress. Preservation of the original high tone is due to the undominated output-output faithfulness constraint OO-FAITH-HEAD-TONE, which requires that head syllables present in the base form maintain the same tones in the base + enclitic form.

(38) OO-FAITH-HEAD-TONE: Head syllables in the base form maintain the same tonal specifications in the derived form.

Though the constraint enforcing the basic window is still active in base + enclitic forms, main stress does not necessarily shift when its original position lies outside the basic window. It only shifts if it lies outside the enclitic window. While ENCLITIC-WINDOW must dominate OO-FAITH- x_{ω} , then, OO-FAITH- x_{ω} must in turn dominate BASIC-WINDOW. Consider a case of the failure of stress shift in the tableau in (39). The primary stress in the base form, *phóos*, occurs on the ultima, meaning that it occurs on the antepenult when *tin*os is attached. While each of the candidates satisfies ENCLITIC-WINDOW, candidates (39a,b) shift their primary stresses to satisfy BASIC-WINDOW, as well, candidate (39a) to the final mora of the base and candidate (39b) to the final syllable of the enclitic. Both candidates are excluded because they violate the higher-ranked OO-FAITH- x_{ω} , and candidate (39w), which preserves the primary stress in its original position, correctly emerges as the winner.

(39) Base output: phóos Derived output: phóos tinos

| phoos tinos | Enc-Window | OO-Faith- x_{ω} | Basic-Window |
|---|------------|------------------------|--------------|
| $\begin{array}{c} x \\ x \\ \square \text{ w. phoos ti nos} \\ \quad \quad / \end{array}$ | 0 | 0 | 1 |
| $\begin{array}{c} x \\ x \\ \text{a. phoos ti nos} \\ \quad \quad / \end{array}$ | 0 | 1 W | 0 L |
| $\begin{array}{c} \\ x \\ \text{b. phoos ti nos} \\ \quad \backslash \quad \end{array}$ | 0 | 1 W | 0 L |

To this point, then, we have seen that primary stress can shift from its original position in base + enclitic forms to bring itself within the enclitic window but not to bring itself within the basic window. This is due the ranking ENCLITIC-WINDOW >> OO-FAITH- x_{ω} >> BASIC-WINDOW. Note, however, that there are additional reasons that main stress shift fails to occur. As we shall see in Section 3.3, even if the original main stress falls outside the enclitic window, there are restrictions on where main stress can shift within the window and the shift will not occur if these cannot be met.

Section 3.2 Determining the position of stress shift

When the original position of the accent in a base form falls outside the enclitic window in a base + enclitic form, the preference is for primary stress to shift to the final syllable of the base. As the tableau in (40) illustrates, the preference is due to the requirements of x_{ω} -LEFT, as constrained by the requirements of ENCLITIC-WINDOW. When the addition of an enclitic to a base form locates the original primary stress outside the enclitic window, ENCLITIC-WINDOW is violated if the primary stress does not shift to a position inside the window, as in candidate (40b). Once it is confined to the enclitic window, x_{ω} -LEFT prefers that the primary stress occur as far to the left within the window as possible. Because the primary stress of candidate (40a), which occurs on the final syllable of the enclitic, could recede further without violating ENCLITIC-WINDOW, (40a) loses to candidate (40w), where the primary stress occurs on the final syllable of the base.

(40) Base output: ángelos Derived output: ángelos tinos

| angelos tinos | Enclitic-Window | x _ω -Left |
|--|-----------------|----------------------|
| $\begin{array}{ccccccc} & & & & & & x \\ & & & & & & / \\ x & & & & & & / \\ \square w. & an & ge & los & ti & nos \\ & / & / & / & / & / & / \end{array}$ | 0 | 2 |
| $\begin{array}{ccccccc} & & & & & & x \\ & & & & & & / \\ x & & & & & & / \\ a. & an & ge & los & ti & nos \\ & & / & \backslash & \backslash & \backslash & \backslash \end{array}$ | 0 | 4 W |
| $\begin{array}{ccccccc} & & & & & & x \\ & & & & & & / \\ x & & & & & & / \\ b. & an & ge & los & ti & nos \\ & / & / & / & / & / & / \end{array}$ | 2 W | 0 L |

Despite the preference for primary stress to shift to the final syllable of the base, there are two circumstances that can prevent it from occurring in this position. First, the main stress cannot shift to the base-final syllable when its supporting foot-level grid entry would be in clash with the foot-level entry left in its original location.

(41)
$$\begin{array}{ccccccc} & & & & & & x \\ & & & & & & / \\ x & & & & & & / \\ * & phi & los & ti & nos \end{array}$$

The constraint that enforces faithfulness to the original foot-level entry is OO-FAITH-X_{FT}, given in (42a), and the constraint that prevents clash is *CLASH, given in (42b).

- (42) a. OO-FAITH-X_{FT}: Every foot-level grid entry in the base form occurs in the same position in the derived form.
 b. *CLASH: There are no adjacent stressed moras.

For forms with disyllabic enclitics, the conflict is resolved by shifting the main stress to the final syllable of the enclitic. The main stress shifts to the final syllable of a disyllabic enclitic, rather than the initial syllable, due to a constraint whose preferences supercede those of x_ω-LEFT in this context. The constraint, x_ω-ENCLITIC-RIGHT, aligns the prosodic word-level gridmark with the right edge of the enclitic when it happens to occur within it.

(43) x_ω-ENCLITIC-RIGHT: $*\langle Enc, x_{\omega}, \sigma \rangle / [\dots x_{\omega} \dots \sigma \dots]_{Enc}$
 ‘Assess a violation mark for every $\langle Enc, x_{\omega}, \sigma \rangle$ such that x_ω precedes σ within Enc.’

The restriction of the alignment requirement to a prosodic word-level gridmark that occurs within the enclitic is crucial. When the prosodic word-level gridmark is able to occur on the base-final syllable, as it is in the cases discussed just above, it can occur outside the enclitic itself. x_{ω} -Left is free to locate the main stress in this position, so that it never becomes subject to x_{ω} -ENC-RIGHT. When the prosodic word-level gridmark cannot occur on the base-final syllable, however, it must fall within the enclitic itself, and it then becomes subject to x_{ω} -ENC-RIGHT. x_{ω} -ENC-RIGHT can then position it on the enclitic-final syllable.

In forms with disyllabic enclitics, then, where shifting stress to the final syllable of the base would result in a clash, the ranking OO-FAITH- x_{F_T} *CLASH, x_{ω} -ENC-RIGHT >> x_{ω} -LEFT ensures that the stress shifts to the final syllable of the enclitic. As the tableau in (44) illustrates, OO-FAITH- x_{F_T} eliminates a candidate like (44c), which shifts primary stress to the base final syllable without leaving behind the stress's original foot-level gridmark. *CLASH eliminates a candidate like (44b), which shifts primary stress to the base-final syllable, resulting in a clash with the foot-level gridmark left in the stress's original position. This leaves candidates (44w,a), where primary stress shifts to a position within the enclitic itself. Candidate (44a) is disqualified by x_{ω} -ENC-RIGHT, because it does not occur as far to the right within the enclitic as possible, and candidate (44w) emerges as the winner.

(44) Base output: *phílos* Derived output: *phílos tinós*

| philos tinos | OO-FTH- x_{F_T} | *CLASH | x_{ω} -ENC-RIGHT | x_{ω} -LEFT |
|--|-------------------|--------|-------------------------|--------------------|
| <div style="text-align: center;"> x x x w. phi los ti nos / \ \ </div> | 0 | 0 | 0 | 3 |
| <div style="text-align: center;"> x x x a. phi los ti nos / /\ </div> | 0 | 0 | 1 W | 2 L |
| <div style="text-align: center;"> x x x b. phi los ti nos / /\ </div> | 0 | 1 W | 0 | 1 L |
| <div style="text-align: center;"> x x c. phi los ti nos / /\ </div> | 1 W | 0 | 0 | 1 L |

The second circumstance where main stress cannot shift to the base-final syllable is when the final syllable happens to be heavy. Heavy syllables are necessarily head syllables as required by the WEIGHT-TO-HEAD constraint. Since

the head syllables of the base cannot change their tonal specifications, due to OO-FAITH-HD-TONE, and main stress must be associated with a high tone, due to x_{ω} -H-TONE, main stress cannot shift to a base-final heavy syllable. Just as the stress shifts to the final syllable of a disyllabic enclitic, then, when shifting it to the final syllable of the base would result in clash, it shifts to the enclitic-final syllable when the base-final syllable is heavy. The necessary ranking is x_{ω} -H-TONE, OO-FAITH-HD-TONE, x_{ω} -ENC-RIGHT >> x_{ω} -LEFT.

In the tableau in (45), the final syllable of the base form, *phóiniks*, is heavy, and it must be a head syllable. In the base output, however, it does not support the primary stress, so it must be associated with a low tone. OO-FAITH-HD-TONE excludes a candidate like (45b) since it shifts primary stress to the base-final syllable where it must be associated with a new high tone. In the remaining candidates, primary stress shifts to a position within the enclitic itself. x_{ω} -ENC-RIGHT excludes a candidate like (45a) because the primary stress does not occur as far to the right as possible within the enclitic. Candidate (45w), where primary stress occurs on the enclitic-final syllable, emerges as the winner.

(45) Base output: *phóiniks* Derived output: *phóiniks tinós*

| phoiniks tinós | OO-Faith-Hd-Tone | x_{ω} -Enc-Right | x_{ω} -Left |
|---|------------------|-------------------------|--------------------|
| <div style="text-align: right; margin-right: 20px;">x</div> <div style="text-align: center; margin-bottom: 5px;">x x</div> <div style="display: flex; justify-content: space-between;"> w. phoi niks ti nos </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> \ </div> | 0 | 0 | 3 |
| <div style="text-align: right; margin-right: 20px;">x</div> <div style="text-align: center; margin-bottom: 5px;">x x</div> <div style="display: flex; justify-content: space-between;"> a. phoi niks ti nos </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> / </div> | 0 | 1 W | 2 L |
| <div style="text-align: right; margin-right: 20px;">x</div> <div style="text-align: center; margin-bottom: 5px;">x x</div> <div style="display: flex; justify-content: space-between;"> b. phoi niks ti nos </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> / </div> | 1 W | 0 | 1 L |

In this section, we have examined how the target location for stress shift is determined in base + enclitic forms. The preference, due to x_{ω} -LEFT, is for primary stress to shift to the final syllable of the base, the leftmost syllable in the enclitic window. When stress cannot shift to the base-final syllable, and must occur within the enclitic instead, it emerges on the enclitic-final syllable, due the preferences of the higher-ranked x_{ω} -ENC-RIGHT. The circumstances in which stress shift must avoid the base-final syllable are when locating primary stress in this position would result in clash or when it would mean replacing a low tone from one of the base's head syllables with a high tone. As we shall see in the next section, these same circumstances actually prevent stress from shifting at all when the enclitic is monosyllabic.

Section 3.3 Failure of stress shift

As mentioned above, stress shift fails to occur when the original main stress already falls within the enclitic window. There are two circumstances, however, where stress shift fails to occur even when the original main stress falls outside the enclitic window. These closely parallel the cases described above where stress shifts to the second syllable of a disyllabic enclitic, except they arise instead with monosyllabic enclitics. In other words, when stress cannot shift to the final syllable of the base, either because it would result in clash or result in a change in tone for one of the base's head syllables, the shift fails to occur at all when the enclitic is monosyllabic.

The central issue in this situation is why the stress cannot shift onto the monosyllabic enclitic itself. We propose that the answer is simply that enclitics prefer not to contain head syllables.

(46) *ENCLITIC-HEAD: No enclitic contains a head syllable of a foot.

When an enclitic is disyllabic, as in the examples analyzed above, Weak Bracketing's non-violable exhaustive parsing requirement makes it impossible to satisfy *ENCLITIC-HEAD. Disyllabic enclitics must contain a head syllable in order for parsing to be exhaustive. When an enclitic is monosyllabic, however, it can satisfy *ENCLITIC-HEAD. It can avoid containing a head syllable by sharing the foot into which it is parsed with the final syllable of the base. The final syllable of the base is the head syllable and the single syllable of the enclitic is the non-head. It is the ability of monosyllabic enclitics, then, to avoid containing a head syllable that prevents them from hosting a shifted primary stress.

Consider, first, the situation where stress shift fails to occur in the context of a potential clash. The ranking necessary to account for the failure of stress shift in this case is OO-FAITH- x_{FT} , *CLASH, *ENCLITIC-HEAD >> ENCLITIC-WINDOW. Consider the tableau for the output *philos tis* in (47). First, OO-FAITH- x_{FT} eliminates candidate (47c), in which primary stress shifts to the base-final syllable without leaving behind its original foot-level gridmark. Next, *CLASH eliminates candidate (47b), which shifts primary stress to the base-final syllable, resulting in a clash with the foot-level gridmark remaining in the stress's original position. Finally, *ENC-HEAD excludes candidate (47a). Because it shifts stress to the monosyllabic enclitic, the enclitic is the head of a foot. Candidate (47w), where stress shift fails to occur at all, emerges as the winner.

(47) Base output: *phílos* Derived output: *phílos tis*

| philos tis | OO-FAITH-X _{Pr} | *CLASH | *ENC-HEAD | ENC-WINDOW |
|--|--------------------------|--------|-----------|------------|
| <pre> x x ☐ w. phi los tis / / </pre> | 0 | 0 | 0 | 1 |
| <pre> x x x a. phi los tis </pre> | 0 | 0 | 1 W | 0 L |
| <pre> x x x b. phi los tis / / </pre> | 0 | 1 W | 0 | 0 L |
| <pre> x x x c. phi los tis / / </pre> | 1 W | 0 | 0 | 0 L |

Next, consider the situation where stress shift fails to occur in the context of a potential tone change for a heavy base-final syllable. To account for the failure of stress shift in this context, the necessary ranking is x_{ω} -H-TONE, OO-FAITH-HD-TONE, *ENC-HEAD >> ENCLITIC-WINDOW. In the tableau in (48), for example, the final syllable of the base form is heavy. It was a head syllable in the base output, and it was associated with a low tone in the base output. OO-FAITH-HD-TONE excludes candidate (48b) since it shifts primary stress to the base-final syllable where it must be associated with a new high tone. Next, *ENC-HEAD excludes candidate (48a), where the primary stress shifts to the monosyllabic enclitic, forcing it to be a head. Candidate (48w), where stress shift fails to occur at all, emerges as the winner.

(48) Base output: *phóiniks* Derived output: *phóiniks tis*

| phoiniks tis | OO-FAITH-HD-TONE | *ENC-HEAD | ENC-WINDOW |
|--|------------------|-----------|------------|
| <pre> x x ☐ w. phoi niks tis / / </pre> | 0 | 0 | 1 |
| <pre> x x x a. phoi niks tis </pre> | 0 | 1 W | 0 L |
| <pre> x x x b. phoi niks tis / / </pre> | 1 W | 0 | 0 L |

In this section, we have accounted for the failure of primary stress to shift to monosyllabic enclitics. When stress cannot shift to a base-final syllable, either because it would result in clash or cause a change in tone from one of the base output's head syllables, the only other place it might occur to satisfy ENCLITIC-WINDOW is within the enclitic itself. Because stress shift would force a monosyllabic enclitic to be a head syllable in violation of *ENC-HEAD, however, a situation that can be avoided if stress shift fails to occur at all, we never encounter stress shift in this context.

Section 4 Summary and Concluding Remarks

A significant challenge in metrical stress theory is the restriction of a word accent to a specific window at one edge of the word. There are two different types of accent window found in Ancient Greek. The first of these windows is the basic window, which is primarily responsible for restricting the position of word accent in forms without enclitics. It consists of the word-final foot and the mora adjacent to the word-final foot. Word accent can occur on any mora within this window. When the final syllable of the word is light, the final foot can be disyllabic, and the basic window extends from the right edge of the word through the final mora of the antepenult. When the final syllable is heavy, the final foot must be monosyllabic, and the basic window can extend only through the final mora of the penult.

The second type of accent window in Ancient Greek is the enclitic window, which restricts the position of word accent in forms with enclitics. The enclitic window consists of the enclitic itself and the final syllable of the base to which it is attached. When the enclitic is disyllabic, the enclitic window is effectively trisyllabic. If the high tone of the original base form falls outside this window, it may shift either to the final syllable of the base or the final syllable of the enclitic, depending on additional factors. When the enclitic is monosyllabic, the enclitic window is effectively disyllabic. If the original accent of the base form does not fall in the enclitic window, it may shift to the base's final syllable, but will not occur on the monosyllabic enclitic itself.

In Section 1, we introduced the general framework for Relation-Specific Alignment constraints and examined the preferences of the specific RSA constraints, BASIC-WINDOW and ENCLITIC-WINDOW, that establish the accent windows in the proposed analysis. BASIC-WINDOW establishes the appropriate domain for the basic window in Ancient Greek by prohibiting a primary stress from preceding the head syllable of a foot with a mora intervening. To satisfy the constraint, the primary stress must either occur within the final foot or on the mora adjacent to the final foot. ENCLITIC-WINDOW establishes the appropriate domain for the enclitic window by prohibiting a primary stress from preceding an enclitic with a syllable intervening. To satisfy ENCLITIC-WINDOW, the primary stress must occur within the enclitic or on the syllable adjacent to the enclitic (the final syllable of the base).

In Section 2, we applied BASIC-WINDOW to Ancient Greek forms without enclitics and determined the rankings of additional constraints—WEIGHT-TO-HEAD, IO-FAITH- x_{ω} , x_{ω} -LEFT, and FIRST-MORA—that position the main stress of the word within the basic window. WEIGHT-TO-HEAD affects the size of the stress window by requiring a heavy final syllable to be the head syllable of a foot, preventing primary stress from occurring further to the left than the mora adjacent to the final syllable. IO-FAITH- x_{ω} ensures that inherent accents that appear within the window maintain their position, and x_{ω} -LEFT dictates that primary stress occurs as far to the left within the window as possible in the absence of an inherent accent. FIRST-MORA captures the preference for accent to fall on syllable-initial moras.

In Section 3, we applied the ENCLITIC-WINDOW constraint to Ancient Greek forms consisting of a base + enclitic combination. When the original primary stress of the base falls outside the enclitic window, the primary stress may shift to a position within the enclitic window. In forms with disyllabic enclitics, the primary stress will shift to the final syllable of the base, due to the preferences of x_{ω} -LEFT, unless it would result in clash or fall on a heavy syllable. In these cases, it must shift within the enclitic itself, occupying the final syllable due to the influence of x_{ω} -ENC-RIGHT. In forms with monosyllabic enclitics, primary stress will shift to the final syllable of the base, unless it would result in clash or fall on a heavy syllable. If it cannot shift to the final syllable of the base, the shift does not occur at all. We attribute this to the preference to avoid making monosyllabic enclitics the head syllables of feet. ☐

HYDE, B; HUSIC, B. AS JANELAS DO ACENTO NO GREGO ANTIGO

Resumo

Um grande desafio na teoria métrica de acento é a restrição de um acento de palavra para um janela específica em uma borda da palavra. Neste artigo, argumentamos que há dois diferentes tipos de janela de acento no Grego Antigo. A primeira delas é a janela básica, que é primariamente responsável por restringir a posição do acento de palavra em formas sem o enclítico. O segundo tipo é a janela enclítica, que restringe a posição do acento da palavra em forma com a ênclise. Nós demonstramos que os dois tipos podem ser explicados sob uma abordagem baseada em restrições de alinhamento de relações específicas (Hyde, 2008 – no prelo)

Palavras-chave

Acento, alinhamento, Grego

References

Buckley, Eugene. 1992. *Theoretical aspects of Kashaya phonology and morphology*. Ph.D. dissertation, University of California, Berkeley. Published 1994, CSLI Publications, Stanford University.

- Buckley, Eugene. 1994. Persistent and cumulative extrametricality in Kashaya. *NLLT* 12, 423-464.
- Comrie, Bernard. 1976. Irregular stress in Polish and Macedonian. *International Review of Slavic Linguistics* 1, 227-240.
- Everett, Daniel L. 1988. On metrical constituent structure in Pirahã phonology. *NLLT* 6:20-46.
- Everett, Daniel L. and Keren Everett. 1984. On the relevance of syllable onsets to stress placement. *LI* 15:5-11.
- Gordon, Matthew. 2002. A factorial typology of quantity-insensitive stress. *NLLT* 20, 491-552.
- Green, Thomas. 1995. *The stress window in Pirahã: a reanalysis of rhythm in Optimality Theory*. Ms, Massachusetts Institute of Technology, Cambridge. ROA-45.
- Green, Thomas and Michael Kenstowicz. 1995. *The Lapse constraint*. Ms, Massachusetts Institute of Technology, Cambridge. ROA-101.
- Hayes, Bruce. 1995. *Metrical stress theory: principles and case studies*. Chicago: University of Chicago Press.
- Hualde, José I. 1998. A gap filled: postpostinitial accent in Azkoitia Basque. *Linguistics* 36, 99-117.
- Hyde, Brett. 2001. *Metrical and prosodic structure in Optimality Theory*. PhD dissertation, Rutgers University. ROA-476.
- Hyde, Brett. 2002. A restrictive theory of metrical stress. *Phonology* 19, 313-339.
- Hyde, Brett. 2008. *Alignment continued: distance-sensitivity, order-sensitivity, and the Midpoint Pathology*. Ms., Washington University, St. Louis. ROA-998.
- Hyde, Brett. forthcoming. Alignment constraints. To appear in *NLLT*.
- Itô, Junko and Armin Mester. 1992. *Weak layering and word binarity*. Ms., University of California, Santa Cruz.
- Jha, Subhadra. 1940-1944. Maithili phonetics. *Indian Linguistics* 8, 435-459.
- Jha, Subhadra. 1958. *The Formation of the Maithili Language*. London: Luzac.
- Kager, René. 1994. *Ternary rhythm in alignment theory*. Ms, Research Institute for Language and Speech, Utrecht University. ROA-35.
- Kager, René. 2005. Rhythmic licensing theory: an extended typology. *Proceedings of the 3rd Seoul International Conference on Phonology*, 5-31.

Prince, Alan, and Paul Smolensky. 1993. *Optimality theory: constraint interaction in generative grammar*. Ms, Rutgers University and University of Colorado, Boulder. Published 2004, Malden, Mass. and Oxford: Blackwell.

Selkirk, Elisabeth O. 1980. The role of prosodic categories in English word stress. *LI* 11, 563-605.

Steriade, Donca. 1988. Greek accent: a case for preserving structure. *LI* 19, 271-314.