THE NOTION OF “CLITIC” derives from one of the oldest problems in the study of language: how to define the “word.” Grammarians have long noted that a difficulty is posed in this area by the fact that certain elements in many languages seem to play an independent role in the grammatical structure of sentences, and thus to warrant the status of “grammatical words,” but in terms of their sound structure form parts of unitary “words” (in a distinct, phonological sense) with other “grammatical words”. Examples such as those in (1) from Homeric Greek are typical of the phenomenon.

(1) a. ἡ de kai autós m’ aiei
    she-N PTC even so me-A always
    [PP en= athanatoisi theoi] neikei
    among immortal-D gods-D upbraids
    even so she always upbraids me among the immortal gods
    (Iliad 1.520, apud Taylor 1996: 480)

  b. theios =moi enunpion elthen Oneiros
    divine me-D dream came Oneiros
    divine Oneiros came to me in a dream
    (Iliad 2.56, apud Taylor 1990: 35)

In the first of these sentences, (proclitic) en= is grammatically an independent preposition, but forms a word together with following athanatoisi ‘immortal’. In the
second, \((enclitic) = \text{moi}\) is a pronominal adjunct ‘to me’ of the verb \(\acute{e}l\text{then}\) ‘came’ but forms a word together with the preceding adjective \(\text{theios}\) ‘divine’. In both cases the independent status of the pro- or enclitic seems assured by the grammar of the sentence, but the unitary status of its combination with a host is confirmed by its phonological (especially accentual) behavior. It is this conflict between two equally well grounded notions of “word” that brought clitics to the attention of traditional grammarians, and subsequently that of linguists.

The problem as just presented is essentially a phonological one (how to get the phonology to treat two or more elements that appear distinct from the point of view of grammatical structure as one unit). The study of clitics was quickly complicated, however, by the suggestion that the same elements that displayed this anomalous phonological behavior also had specific, idiosyncratic syntactic properties. Jakob Wackernagel (1892) proposed, following Delbrück (1878), that the unstressed clitics of the oldest Indo-European languages (and thus, proto-Indo-European) occurred systematically after the first word of the sentence, regardless of their grammatical function. This notion of a special syntax for clitics later became part of the very definition of “clitic” for some linguists, and much of the literature presumes that designating something as a clitic entails special behavior both in the phonology and in the syntax.

It is nonetheless useful to disentangle two distinct dimensions of “clitic” behavior, the phonological and the morphosyntactic, which turn out to be logically (and empirically) orthogonal (see Anderson 2005 for elaboration of this point, as well as related discussion in surveys such as that of Halpern (1997), the papers in Dixon & Aikhenvald 2002, and much other literature both traditional and modern). In the context of the present book, this chapter will focus almost exclusively on the phonological aspects of clitic behavior, and references to “clitics” will be to elements that display the relevant phonological properties (without regard to whether they display unusual syntactic distribution).

1 What is a (Phonological) Clitic?

As a starting point, we can ask which elements we ought to consider as clitics from such a perspective. The notion of clitic in traditional grammar is that of a “little” word, and in particular one that does not bear an independent accent but rather leans\(^\text{4}\) accentually on an adjacent word. The proposal that clitics are always unaccented, however, is problematic.

\(^4\)The word \textit{clitic} derives from Greek \textit{klítikos} ‘leaning’, from \textit{klinein} ‘to lean’.
For instance, in Modern Greek, enclitics do not usually receive stress. Thus, [ðóse] 'give!'; [ðóse=mu] 'give me!' with no stress on the clitic =mu. But when two such enclitics are attached to the same host, a stress appears on the penultimate one, as in [ðòse=mú=to] 'give it to me!' This is a consequence of a general rule of Modern Greek that builds a trochaic foot over two otherwise unstressed syllables at the right edge of a word, provided the result does not involve a stress clash. Thus, when a clitic is added to antepenultimate-stressed [triðáfilo] 'rose', the result is [triðáfiló=mu] 'my rose'. It is not the sequence of clitics per se that results in the penultimate stress in [ðòse=mú=to], but rather the application of this rule: cf. [pès=mu=to] 'say it to me!' with no stress on =mu in an otherwise-identical sequence because such a stress would clash with that on the monosyllabic stem. On the traditional understanding, the claim that =mu '1sg' is a clitic seems to be compromised by the fact that it sometimes bears an accent, but we can see that this accent is due to the regular phonology of the language, and not to properties of =mu '1sg' itself.

Similarly, in the Papuan language Bilua (Obata 2003), stress is generally initial, but proclitic pronouns do not bear stress, as in example (2a). Proclitics can also appear in constructions in which there is no adjacent stressed element, however. This occurs under two conditions: first, a vowel-final clitic does not form part of a word with a following vowel-initial stem, as in example (2b), and secondly, under some circumstances a cluster of clitics arises which is not associated with any non-clitic host, as in example (2c). In these circumstances, the clitic receives stress if initial, as illustrated below.

(2) a. [o= βouβax =k =a]  
3SG.M kill 3SG.F.O TNS  
he killed it

b. ['o  'odiè =k =a]  
3SG.M call 3SG.F.O TNS  
he called her

c. 'o= =k =a  'zari=a  'rae=ng=ɔ  
3SG.M 3SG.F PRT want-TNS marry-2SG.O-NOM  
he wants to marry you

Designating as “clitics” exactly those elements that do not bear stress, then, does not appear to give us the results we desire. Instead, it is proposed in Anderson 2005

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Arvaniti (1992) provides experimental evidence that, contrary to the proposals of some previous authors, the added stress in such cases is primary with the original word stress being reduced to secondary. This result has been confirmed by the judgments of several native speakers.
that the right way to pick out clitics phonologically is as *prosodically deficient* elements. Let us assume that full words in general have a lexical representation that organizes their phonological content into syllables, feet, and ultimately one or more Phonological Words (PWords). We can then say that a phonological form realizing some grammatical element, whose segmental content may be organized into syllables and possibly feet but which is not lexically assigned the status of a PWord, is a clitic in the desired phonological sense. This characterization is not compromised by the fact that such a clitic will typically become part of a PWord (perhaps together with other clitics, as in Modern Greek [ðòse=mu=to] ‘give it to me!’ or in the Bilua sentence (2c) above) as a consequence of the principles of prosodic organization of the language in question.

The property of being a clitic in this sense, then, is not necessarily a characteristic of a lexical item, but rather of a phonological form which can realize that lexical item. The same item may well have both clitic and non-clitic forms. The classic example of this is the case of the auxiliary verbs in English: many of these have both full, non-clitic forms (*is, has, had, would, will,* etc.) and clitic forms (*’s, ’d, ’ll,* etc.). From the point of view of the grammar, these are essentially free variants. If a reduced (clitic) form is chosen to lexicalize the auxiliary in a given sentence, however, this may result in prosodic ill-formedness, as a consequence of the impossibility of incorporating the prosodically deficient item into the overall sound structure of the sentence in a well-formed way (see Anderson 2008 for discussion and analysis). Apart from these differential phonological effects, however, the reduced and unreduced auxiliaries are instantiations of the same grammatical element.

In order to be pronounced, such prosodically deficient material must be incorporated into larger prosodic structure in some way: thus, the penultimate stress in Modern Greek [ðòse=mu=to] results from incorporating both enclitics into the same phonological word as the host verb, and then building a trochaic foot over the resultant sequence of unstressed word final syllables. The Bilua examples result from assigning PWord status to clusters of material that cannot be incorporated into any independent PWord, and then assigning initial stress to this word. It is the characterization of this sort of integration (which we will refer to as *Stray Adjunction*) that constitutes the phonology of cliticization, and this area of phonology will be central to the discussion in later sections of the present chapter.
2 How do Clitics Differ from Affixes?

Although the characterization of clitics as prosodically deficient grammatical elements appears to capture the phonological dimension of their behavior, it does not pick them out uniquely in grammatical structure. With relatively few exceptions, the affixes found within words as formal markers of derivational and inflectional structure also lack an autonomous organization into prosodic constituents at or above the level of the PWord, and the question naturally arises of how clitics and affixes are to be distinguished.

The classic characterization of the issues involved is provided by the widely cited work of Zwicky & Pullum (1983), who enumerate a number of differences between clitics and affixes in defense of their analysis of English -n’t as the realization of an inflectional category of modals and other auxiliary verbs rather than as a clitic. These include the points in (3).

(3) a. Clitics have a low degree of selection with respect to their hosts; affixes a high degree of selection.
b. Affixed words are more likely to have accidental or paradigmatic gaps than host+clitic combinations.
c. Affixed words are more likely to have idiosyncratic shapes than host+clitic combinations.
d. Affixed words are more likely to have idiosyncratic semantics than host+clitic combinations.
e. Syntactic rules can affect affixed words, but not groups of host+clitic.
f. Clitics, but not affixes, can be attached to material already containing clitics.

These points can be illustrated, following Zwicky & Pullum (1983), by the contrasts in (4) between English clitic auxiliaries (e.g. is ‘is, has’, d ‘would’) and the element they argue is an inflectional affix, n’t ‘NEG’.

(4) a. The clitic auxiliaries can attach to words of any class that happen to fall at the right edge of the preceding constituent; n’t can only be added to finite forms of auxiliary and modal verbs.
b. Combinations of clitic auxiliaries with preceding material are limited only by the possibilities of the syntax; some combinations of modal plus n’t do not exist (e.g. mayn’t, amn’t) while one (ain’t) does not correspond to a specific non-negative form.
c. Combinations of host plus clitic auxiliary are governed by the regular phonology of English as seen for instance in regular plurals and past tense forms with the endings /z/ and /d/; forms such as don't, won't, can't and shan't bear idiosyncratic relations to their non-negative counterparts.

d. Clitic auxiliaries make the same syntactic and semantic contribution to a sentence as full forms; auxiliaries in n't can have idiosyncratic semantics (thus, in you mustn't go the negation is within the scope of the modal, while in you can't go the modal is in the scope of negation).

e. Clitic auxiliaries do not move together with their host (thus, a question corresponding to I think John's at the door is Who do you think's at the door? and not *Who's do you think at the door?) while the negated auxiliaries move as a unit (the question corresponding to I haven't any more bananas is Haven't you any more bananas? and not *Have youn't any more bananas?).

f. While clitics can be added to other clitics (I'd've done better if I could've), n't cannot (thus, I wouldn't do that if I were you cannot be expressed as *I'dn't do that if I were you).

Zwicky & Pullum present these differences as descriptive observations, supported by comparisons between uncontroversial instances of clitics and affixes. They can be argued to follow, however, from the proposal that clitics are introduced into syntactic structure as prosodically deficient, but morphosyntactically independent, elements while affixed words are formed by lexical operations and appear as units in the syntax. Although Zwicky & Pullum formulate some of the principles in (3) only as tendencies, the present account of the nature of clitics suggests that nearly all of them should be construed categorically.

The exception to this generally absolute nature of the differences between clitics and affixes is (3d): syntactically compositional idioms can be semantically idiosyncratic (e.g., build castles in the air ‘make unrealistic plans or proposals’), and there is

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3The specific framework I presume is roughly that of Anderson 1992. Within that theory, productive inflection results from the operation of Word Formation Rules that take a lexical stem and the Morphosyntactic representation of a syntactic position as their input and yield inflected words as their output; while derivation and lexically idiosyncratic inflection result from Word Formation Rules that construct and relate lexical stems. The details of this position are not essential: what matters is the claim that fully inflected words, structured as PWords, appear in the prosodic structure projected from the syntax. Clitics appear in this structure either as prosodically deficient lexical items (e.g., the contracted forms of English Auxiliaries: see Anderson 2008) or as “Special Clitics” introduced (as phrasal morphology) into that structure at a point where non-clitic material is already present, as described in Anderson 2005.
no reason to exclude host+clitic combinations from this same possibility. Indeed,
many languages assign special meanings to verbs in the presence of particular clitics,
such as French *il y a* ‘there is’ or the Italian *verbi procomplementari* studied by Russi
(2008). These latter are combinations of a verb with a specific clitic or cluster of clitics,
which take on a conventionalized meaning that is not compositionally related to that
of the basic verb. Examples are provided in (5).

(5)  
   a. *far*=la ‘deceive; prevail on someone cunningly’ from *fare* ‘make, do’ + *la* ‘3SGDO’
   b. *voler*=ne ‘resent, have hard feelings for someone’ from *volere* ‘want’ + *ne* ‘partitive’
   c. *prendere*=se=la ‘take offense, be upset’ from *prendere* ‘take’ + si ‘Refl’ + *la* ‘3SGDO’

The constructions in which such combinations are found are syntactically normal
(e.g., *Me l’ha fatta di nuovo* ‘he tricked me again’) but their interpretation cannot be
directly derived from those of their parts.

The rest of the properties in (3) follow from the proposed architecture of grammar.
Clitics *per se* are not selective with respect to their hosts (3a), because they are placed
by principles that do not make direct reference to the host (although in the case of
“Special clitics,” the phrasal environment for their introduction may be such that only
a restricted range of hosts will be present in the appropriate position). They do not
display gaps (3b) because individual host+clitic combinations are not listed as such
in the lexicon and so are not subject to omission. Similarly, such combinations are
not available for lexical listing of idiosyncratic form (3c). Host+clitic combinations
are not affected in a unitary way by the syntax (3e), because the fact of being a clitic
entails only a phonological, not a syntactic relation to the host.

The only way a clitic could appear “inside of” an affix (3f) would be if some special
circumstances caused it to be introduced in that way as an “endoclitic.” Most of the
putative instances of this situation that have been adduced, such as the pronominal
clitics that appear between the verbal stem and a future or conditional ending in
Portuguese (e.g. *mostrár-no-lo-*á ‘s/he will show them to us’) appear to have alternative
analyses that do not involve “endocliticization” (see Anderson 2005: 152ff.).

One exception is the case of Udi as discussed by Harris (2002), which does appear
to be a real example. In an Udi form like that in (6), the clitic =ne ‘3SG’ comes
between one affix and another.
(6) nana-n äyel-ax  ak’-es=ne-d-e  k’učan
mother-ERG child-DAT see-INF-3SG-CAUS-AORII puppl.ABS
The mother showed a puppy to the child

In a form such as a=z-q’-e ‘I received’, indeed, the clitic element =z ‘1SG’ appears within the monomorphemic root aq ‘receive’. The analysis of such cases is extremely interesting, but as argued in Anderson 2005: 161–165, the principles involved are still consistent with the claim that clitics are added to affixed words, and not the reverse.

3 How are Clitics Prosodically Related to their Hosts?

Let us assume, then, that lexical elements appear in the input to the phonology with a certain amount of prosodic organization, and that non-clitics differ from clitics in that only the former are lexically organized into PWords. Clitics and non-clitics alike must be organized into Phonological Phrases (PPhrases) and perhaps higher levels of prosodic structure, though that is of less importance for present concerns. This phrasing can be regarded as being projected at least in part from syntactic structure, but the question remains of how prosodically deficient material is related to adjacent PWords within this overall organization.

The categories of prosodic structure are generally assumed to be related in a hierarchical fashion, with syllables constituting Feet, which are parts of PWords, which are in turn grouped into PPhrases, etc.

(7) The Prosodic Hierarchy: σ < Foot < PWord < PPhrase < IntPhrase…

A particularly restrictive view of this hierarchy known as the Strict Layering Hypothesis was defended by Nespor and Vogel (1986), for whom the relation between category types was seen as exhaustive at all levels: that is, PPhrases consisted exclusively of PWords, which in turn consisted exclusively of Feet, etc. In a paper which is fundamental to the study of clitic phonology, however, Selkirk (1995), following arguments of Inkelas (1989), proposed that the principles of the Prosodic Hierarchy ought to be regarded as a set of individually ranked, violable constraints, and this view has dominated subsequent research.

Nespor and Vogel also posited a category of Clitic Groups between the PPhrase and the PWord. Subsequent work, such as Booij 1988 and Zec & Inkelas 1992, has generally concluded that no such distinct prosodic category need be introduced, and it is disregarded here. For some discussion, see Anderson 2005: 42ff.
Associating positions on the ordering in (7) with consecutive integers, we could express the basic nature of the Prosodic Hierarchy as involving two fundamental requirements.

(8) **Layeredness:** No $C^i$ dominates a $C^j$ where $j > i$ (e.g., no Foot contains a PWord)

**Headedness** (first approximation): Every $C^i$ directly dominates some $C^{i-1}$ (e.g., every PWord contains a Foot)

The Strict Layering Hypothesis can be expressed as the claim that representations also meet two other requirements.

(9) **Exhaustivity:** No $C^i$ directly dominates a $C^j$ where $j < i - 1$ (e.g., no PWord directly dominates a σ)

**Non-Recursivity:** No $C^i$ directly dominates another $C^i$ (e.g., no PWord contains another PWord; adjunction structures do not exist)

In order to maintain its logical independence from Non-recursivity, the formulation of Headedness in (8) can be replaced by the following.

(10) **Headedness:** Every $C^i$ directly dominates some $C^j$ where $j \geq i - 1$

As noted already by Selkirk (1995), Layeredness and Headedness are inherent in the nature of the Prosodic Hierarchy; since these notions are in some sense definitional, they are not violable, and if construed as constraints should be treated as always undominated. Another undominated requirement, which we could call that of **Full Interpretation**, mandates that all phonological material to be pronounced be integrated into the overall prosodic structure, which means in effect that there must be a path from it to the root of the prosodic tree. It is this constraint that enforces the application of some process of Stray Adjunction in the case of material which is otherwise prosodically unaffiliated.

The requirements in (9), however, make substantive claims about the range of prosodic structures found in the languages of the world, and as such, are subject to empirical confirmation. Evidence suggests, in fact, that they are violated in some instances, and this is the basis for interpreting them not as definitional of prosodic structure, but as potentially violable constraints.

Of these the conditions in (11), formulated now as constraints, are apparently never violated and so can be regarded as undominated along with **Full Interpretation**.
Layeredness: No category dominates a higher-level category.

Headedness: Every category directly dominates (at least) one element no more than one level below it on the hierarchy.

The additional conditions of the Strict Layering condition can, as we have seen, be violated. Furthermore, violation may be ‘local’ in the sense that a language violating, say, Exhaustivity at the PPhrase level may nonetheless conform to this constraint at other levels, such as the PWord. The relevant principles thus need to be formulated as families of constraints, varying over the categories of the hierarchy as in (12).

Exhaustivity($C_i$): Every element of category $C_i$ is exhaustively composed of elements of category $C_{i-1}$.

NonRecursivity($C_i$): No element of category $C_i$ directly dominates another instance of $C_i$.

Adherence to the Strict Layering Condition led Nespor and Vogel to require that clitics always constitute PWords in their own right, sisters of their host within a constituent of the next highest level of the hierarchy. This is somewhat problematic, given that clitics do not generally manifest the properties of independent PWords, such as autonomous stress. If we construe the conditions characterizing the Prosodic Hierarchy in (12) as constraints that can be violated under the pressure of other constraints, however, there are a variety of possible relations that might obtain between a clitic and its host, and Selkirk (1995) justifies the claim that all of these are in fact instantiated. The typology of clitic-host relations that she proposes is as in (13).

(13) a. PWord Clitic:\[ PPh \]
\[ \begin{array}{c} PWd \\ Host \end{array} \quad \begin{array}{c} PWd \\ Clitic \end{array} \]

b. Free Clitic:\[ PPh \]
\[ \begin{array}{c} PWd \\ Host \end{array} \quad \begin{array}{c} Clitic \end{array} \]

\[ ^1\text{Since clitics have been defined precisely as elements lacking PWord structure, the notion of a “PWord Clitic” may seem paradoxical. The point is that while clitics do not have such structure underlyingly, the subsequent operation of the language’s broader principles of prosodic organization may give rise to such a structure, as we saw in the case of Bilua above.} \]
c. **Affixal Clitic:**

```
PPh
| PWd
| Host Clitic
```

d. **Internal Clitic:**

```
PPh
| PWd
| Host Clitic
```

PWord clitics, of course, are structures that result when all of the constraints in (12) are satisfied so that Strict Layering obtains. Free clitics, in contrast, result when some other constraint forces violations of **Exhaustivity(PPhrase):** the PPhrase thus contains a constituent lower in the hierarchy than a PWord, such as a stray syllable or foot. Affixal clitics result when **Exhaustivity(PPhrase)** is satisfied, but **NonRecur-sivity(PWord)** is not (and **Exhaustivity(PWord)** is also violated, in case the stray material constituting the clitic is a syllable and not a foot).

Internal clitics, like PWord clitics, involve no violations of any of the constraints. Differentiating these two possibilities requires us to invoke another constraint:

(14) **Prosodic Faithfulness:** Prosodic structure in the input should be preserved in the output.

If we assume that the prosodic structure of the host up to the level of the PWord is present in the input to that part of the phonology enforcing Stray Adjunction, we can see that this structure is preserved intact if the stray material is incorporated as a PWord clitic, but altered if it is incorporated as an internal clitic. The choice between the two, then, depends on the relative importance of **Prosodic Faithfulness** and some constraint disfavoring the creation of additional PWord structure (say, *Struct*).

For an example of PWord clitics, we can appeal to Bilua examples such as (2b, c) where other aspects of the structure prevent the incorporation of the clitic into an adjacent PWord, but the prohibition against building new PWords is not highly enough ranked to prevent a new PWord from being formed. The remaining possibilities can be demonstrated through a set of closely related systems analyzed elegantly by Peperkamp (1997). As reviewed below, she argues that Standard Italian post-verbal pronominal clitics have the structure of free clitics, while the corresponding elements in Neapolitan are affixal clitics and those of Lucanian are internal clitics. The three dialects provide a nice contrasting set, differing minimally in the way clitics are incorporated into...
prosodic structure as described in terms of varied rankings of the constraints introduced above.

The first system to be considered is that of Neapolitan, as illustrated in (15).

(15) **Neapolitan:**

<table>
<thead>
<tr>
<th>Verb</th>
<th>Imperative</th>
<th>Imperative + ‘it’</th>
<th>Imperative + ‘you’ + ‘it’</th>
</tr>
</thead>
<tbody>
<tr>
<td>do</td>
<td>fá</td>
<td>fállo</td>
<td>fattîllo</td>
</tr>
<tr>
<td>tell</td>
<td>cónta</td>
<td>cóntalô</td>
<td>cóntatîllo</td>
</tr>
<tr>
<td>comb</td>
<td>pëttina</td>
<td>pëttinâlô</td>
<td>pëttinatîllo</td>
</tr>
</tbody>
</table>

I assume that PWords are built lexically over the host verbs, and then prosodically deficient clitics are added post-lexically. Note that when clitics are added, the first stress does not change except in one case (fattîllo), where we can say that the new stress appearing on the clitic sequence has the effect of suppressing the original stem stress to avoid violating *Clash* (which penalizes a sequence of two adjacent stresses). Peperkamp shows that we can describe this system by saying that the clitic material is adjoined to the existing prosodic word, without modifying its structure, as in (16).

(16) (a) PPh  (b) PPh

PWr

PWd

PWd

F... σ

lex cl

F...

F

lex cl₁ cl₂

A single clitic constitutes a single syllable, and not a Foot; two clitics, however, provide enough material to constitute a Foot, and thus introduce an additional stress. Peperkamp’s discussion suggests that there are aspects of formal suppletion that require the treatment of the two-clitic sequence as a single unit, which is eligible to be a Foot. Alternatively, we could assume simply that the two monosyllabic units are introduced together, and subsequently organized into a Foot.

We can describe this system as follows. **Full Interpretation**, **Headedness** and **Layeredness** are all undominated well-formedness conditions on the candidates that are to be compared, so they play no part in the ranking. It is also the case that prosodic structure assigned lexically is generally preserved, so **Prosodic Faithfulness** (14) is also ranked high.

In the case of a monosyllabic stem followed by two clitics, however, the need to avoid successive stressed syllables is more important than the preservation of input
prosody, so the stress on the stem is lost as a result of the domination of Prosodic Faithfulness by another constraint (17).  

\[(17) \text{*Clash: Sequences of two consecutive stressed syllables are disallowed.}\]

To satisfy Full Interpretation, prosodically deficient material (i.e., the clitics) must be incorporated into the structure somewhere, and the choices are limited. Incorporation into a Foot would violate well-formedness conditions on feet, as well as Faithfulness to existing prosodic structure. Incorporation into the existing PWord would also violate Faithfulness. Incorporation at the PPhrase level would violate Exhaustivity(PPhrase). The Affixal clitic structures that are actually found indicate that Exhaustivity(PPhrase) out-ranks Non-Recursivity(PWord): that is, building a recursive PWord preserves the existing prosodic structure, and avoids having lower level constituents (syllables, feet) directly dominated by a PPhrase. The overall constraint ranking for Neapolitan is as in (18).

\[(18) \text{*Clash:} \gg \text{Prosodic Faithfulness} \gg \text{Exhaustivity(PPhrase)} \gg \text{NonRecursivity(PWord)}\]

Now compare the Neapolitan approach to Stray Adjunction with that employed in another dialect, Lucanian.

\[(19) \text{Lucanian:}\]

\[a. \; \text{vinnə ‘sell’; vənnillə ‘sell it’}\]
\[b. \; \text{rammillə ‘give me it’; mannatəmillə ‘send me it’}\]

We see in (19a) that the addition of a clitic in this language causes stress to shift rightward.  

\[7\text{The fact that it is the first, rather than the second of two adjacent stresses that is lost must be resolved by other aspects of the prosodic phonology of Neapolitan not considered here.}\]

\[7\text{Stress shift is responsible for the vowel alternation in these forms, with stressed [i] corresponding to unstressed [a].}\]
The constraint ranking necessary to obtain this result is (21).

(21) \textbf{NonRecursivity(PWord), Exhaustivity(PWord) \gg Prosodic Faithfulness}

Let us finally compare the situation in (standard) Italian, illustrated in (22).

\textbf{(22) Standard Italian:}

\begin{enumerate}
  \item \textit{pórt\textipa{a}} 'bring', \textit{pórtami} 'bring me'
  \item \textit{pórtame\textipa{l}o} 'bring me it', \textit{teléfoname\textipa{l}o} 'telephone it to me'
\end{enumerate}

Here the addition of a clitic does not alter the lexically assigned stress, suggesting that Faithfulness is highly ranked. Even when two clitics are added, as in (22b), the stress is not altered, and apparently no new stress is assigned even though two syllables of additional material would support the construction of a new Foot if this material were within the PWord. Apparently, then, Stray Adjunction in Standard Italian produces Free clitics by attachment to the PPhrase, as in (23).

(23) \begin{tikzpicture}
  \node (pword) at (0,0) {PWd};
  \node (phrase) at (0,1.5) {PPh};
  \node (ft) at (1,3) {Ft};
  \node (mannata) at (-1,2) {mannata};
  \node (mi) at (0,2) {mi};
  \node (ilo) at (1,2) {ilo};
  \draw (phrase) -- (pword); \draw (pword) -- (ft); \draw (ft) -- (mannata); \draw (ft) -- (mi); \draw (ft) -- (ilo);
\end{tikzpicture}

The required ranking is that of (24).

(24) \textbf{NonRecursivity,Exhaustivity(PWord),Prosodic Faithfulness \gg Exhaustivity(PPhrase)}

Stray Adjunction in these three Italian dialects is thus based on different rankings of the prosodic constraints, yielding three different structural types of clitic as a reflection of these differences in their post-lexical phonology.

Peperkamp argues for the structural differences among Italian dialects on the basis of the distribution of stress alone, but sometimes this is insufficient to provide an
unambiguous analysis. For example, in the case of a language with stress oriented to the left of the word (or simply preserved by high ranking Faithfulness constraints) and a set of unstressed enclitics, stress alone will not allow us to differentiate among the structures of free, affixal and internal clitics. To do so, we must establish the location of PWord boundaries in the resulting form. The three possibilities can be distinguished in that way as in (25).

(25) **Free clitic**: (...)host_pWd clitic|PPh

**Affixal clitic**: (...)host_pWd clitic|PPh

**Internal clitic**: (...)host clitic|PPh

Determining which of these structures is present in a given instance is certainly not trivial, but it can often be done by looking for phonological phenomena which occur at the edges of PWords or across PWord boundaries. Revithiadou (2008) provides a detailed study of a range of dialects of Modern Greek of exactly this sort, showing that phonological regularities characteristic of prosodic boundaries identify different host-clitic relationships in different dialects. Similar arguments provided by Booij & Rubach (1987) for Polish can be interpreted as showing that proclitic prepositions in that language (e.g. *bez* ‘without’ in *bez namysłu* ‘without thinking’) are related to a following host as affixal clitics, as reviewed in Anderson 2005: 40f.

It appears that, in general, the attachment of a clitic to a host on one side or the other can be derived from the overall prosodic organization of a language. Typically, prosodic structure above the level of the PWord is projected from the syntax, and the commonest tendency is for this structure to be respected: that is, a clitic attaches phonologically to the host (on its right or on its left) with which it is most closely affiliated grammatically. In some instances, though, this direction of attachment is directly contravened.

In Kwak’wala, for instance, as discussed at length in Anderson 2005, DP-initial determiner clitics associate phonologically not with the following word, which is part of the same DP, but rather with the preceding word, which is not. An example is provided by the sentence in (26).


cause hurt-DEM man-OBJ-DEM dog-INST-DEM stick

The man hurt the dog with the stick

Here the square brackets indicate syntactic constituents while inter-word spaces delineate PWords: thus, *bógʷ anoma* [=x-a] is a single PWord, while [=ida bógʷ anoma]DP is a single DP.
This situation can be related to the fact that Kwak’ala is a language in which virtually all morphological marking is suffixal, and thus the lexical root is always (with the exception of reduplicated forms) word initial. A preference to maintain this same situation at the level of prosodic structure can be expressed as a constraint such as (27).

(27) \text{Align}(\text{PWord}, \text{L}, \text{LexWord}, \text{L}) (\gg \text{Align}(\text{XP}, \text{L}, \text{PPhrase}, \text{L}))

That is, it is important that the left edge of a PWord coincide with the left edge of a lexical word (and not, e.g., a clitic determiner). This constraint is more highly ranked than the requirement that the left edges of syntactic phrases coincide with the left edges of PPhrases, and forces the clitics to associate anti-syntactically to their left.

The claim that the direction of attachment of clitics can be derived from the prosodic organization of the language as a whole (including constraints such as the one in (27)) is a strong one. It is at variance with proposals such as that of Klavans (1985), where it was claimed that among the dimensions defining individual clitics in a language was a parameter of direction of attachment. Subsequent research has suggested, however, that once grammatical structure and its relation to prosody are taken into account, a unitary analysis can be offered for the way clitics attach in any individual language. Counter-examples to this claim would have to involve pairs of clitics that were entirely comparable in their grammar, but where one attached to a host on its left and the other to a host on its right (under otherwise-identical prosodic conditions). Such examples do not appear to exist, and it seems reasonable to propose that the direction of attachment of clitics is a function of the overall grammar of a language, rather than a property of individual clitics.

In summary, clitics can be characterized from a phonological point of view as linguistic elements lacking in prosodic structure at (or below) the level of the PWord. Linguistic units that are called “clitics” on the basis of unusual syntactic behavior may or may not be clitics in this sense: for example, Italian \textit{loro} ‘3PL Dat’ behaves in a way which is partially similar to the other Italian pronominal clitics, but \textit{loro} is not prosodically deficient, and thus does not constitute a clitic from the phonological point of view. Similarly, Hungarian verbal prefixes such as \textit{oda} in \textit{oda-ment-em} ‘I went over there’ constitute PWords in their own right (as shown by stress and Vowel Harmony), and thus are not phonological clitics even though they bear a special grammatical relation to an associated verb.

Material that is not fully integrated into prosodic structure (at the PWord level) in the input can be called “stray,” and the phonology of cliticization is fundamentally a matter of how this stray material is incorporated into the overall prosodic structure of the sentence: how “Stray Adjunction” is enforced. The basic mechanics of this can
be described by an ordering of the constraints characterizing prosodic layering with respect to one another and to other constraints within the grammar of the language in question. Arguments for this ranking can be provided either directly from properties of the resulting prosodic structure (such as the location of stress) or from other phonological phenomena that are sensitive to it.

4 How is the Segmental Phonology of a Clitic Related to that of its Host?

A consequence of the grammatical architecture proposed here concerns the phonology applicable to clitic+host combinations. Since the formation of these presupposes the forms of lexical words, it would appear that in terms of classical Lexical Phonology (e.g. Kiparsky 1985), any adjustments to their shape must follow from principles of the post-lexical phonology, not the lexical phonology sensu stricto. Bermudez-Otero & Payne (to appear) note this, but assert that examples exist which controvert it: cases in which host+clitic combinations are affected by rules that are lexical, not post-lexical in character.

The one such example cited by Bermudez-Otero and Payne concerns laryngeal neutralization in Catalan. They argue, following the descriptive literature (e.g. Wheeler 2005) that voicing is neutralized in coda obstruents in this language. When these are closely followed by an onset consonant (in the same or a following word), they show the same voicing as that consonant, and it is plausible to attribute this to assimilation. Word finally, however, coda obstruents are devoiced; and this devoicing persists even if the consonant in question is re-syllabified post-lexically with a following vowel. These facts are illustrated in (28) for the stem /ʎoβ/ ‘wolf’, which ends in underlying voiced /b/.

(28)   a. llop [ʎop] ‘wolf’
       b. llop lliure [ʎoβ.ʎiw.re] ‘free wolf’
       c. llop trist [ʎop.trist] ‘sad wolf’
       d. lloba [ʎoβa] ‘she-wolf’
       e. llop amic [ʎo.pə.mik] ‘friendly wolf’

They suggest that there must be a “word-level” principle of laryngeal neutralization which is counter-bled by post-lexical resyllabification in forms like (28e).
forms where a stem-final voiced obstruent is followed by a vowel-initial clitic, however, the pattern is subtly different: resyllabification bleeds laryngeal neutralization, as illustrated in (29) for the stem /ɾb/ ‘receive’.

(29)  
  a. rebre [ɾb.ɾə] receive-INF
  c. rep= ho! [ɾ.ɾə] ‘receive[2SG.IMP]-3SG.ACC.N!’

Why should there be a difference in voicing between the stem-final /b/ as it appears in (29b) and in (29c)? Bermudez-Otero and Payne conclude that this must be because the clitic in (29c) must already be present (and have triggered resyllabification) at the point where Laryngeal Neutralization takes place: “These data show unequivocally that enclitic =ho belongs in the same grammatical word as the verb stem, since it causes the stem-final consonant to be syllabified as an onset already at the word level. […] Therefore, enclitic =ho cannot be a phrasal affix.”

This conclusion does not follow, however. It results from Bermudez-Otero and Payne’s equation of “word-level” phonology with “lexical” phonology, and the assumption that the “post-lexical” phonology is monolithic. In fact, however, we can take the “word-level” character of laryngeal neutralization to refer to the PWord, not (as Bermudez-Otero and Payne do) to the grammatical word. If we assume that post-verbal pronominal clitics in Catalan are affixal clitics, the result of stray adjunction in (29c) will be [[[ɾb]PWd[ʊ]PWd]PPh]. This entire construction is a PWord, and it is plausible to assume that resyllabification of this PWord yields a structure like [[[ɾt]PWd[ʊ]PWd]PWd], bleeding Laryngeal Neutralization. In (29b), however, the structure is [[[ɾb]PWd[əɾ]PWd]PPh]. Laryngeal Neutralization, a rule whose scope is the PWord, converts this to [[[ɾpt]PWd[əɾ]PWd]PPh], which is subsequently resyllabified at the PPhrase level to [[[ɾt]PWd[ɾəɾə]PWd]PPh].

Resyllabification at the PPhrase level does not bleed Laryngeal Neutralization, but Resyllabification at the PWord level does. Since Bermudez-Otero and Payne do not show that Laryngeal Neutralization has other characteristics of a “lexical” rather than “post-lexical” process (e.g., lexical exceptions), it follows only that the post-lexical phonology displays a sort of cyclic structure, with a round of phonological adjustment induced by each of the categories of the Prosodic Hierarchy, and not that clitics like Catalan =ho are not phrasal affixes. The notion that phonological regularities enforced at different levels of the Prosodic Hierarchy (such as the PWord vs. the PPhrase) can be at least partially distinct is a cornerstone of prosodic theory, and a basic way in which one argues that a given prosodic constituent is of one type rather than another (see Nespor & Vogel 1986).
I conclude, then, that the phonology relating clitics to their hosts is in general of the “post-lexical” type, with the specifics depending on the regularities governing various prosodic constituent types within a given language. Given the current state of instability that governs the architecture of phonological theory, with classical rule-based Lexical Phonology and its most direct constraint-based dependent, Stratal OT (Bermudez-Otero forthcoming), in conflict both with the “standard” monolithic model of OT and also with various alternatives such as OT-CC (McCarthy 2007) and Optimal Interleaving (Wolf 2008), Phase-based Phonology as represented by various papers in Grohmann (2009), and others, it is difficult to see the facts above from Catalan as decisively incompatible with the view of clitics as phonologically integrated with their hosts at the syntactic level, rather than in the lexicon.

5 Conclusion

There is very little to the phonology of clitics, then, that is unique to these elements. In terms of their representation, they have the character of being incompletely organized in prosodic terms: they are deficient in not constituting PWords, as opposed to normal lexical items. Once that is taken into account, the rest of their behavior follows from the prosodic phonology of the language. Aspects of prosodic well-formedness require that they undergo Stray Adjunction, or incorporation into adjacent prosodic units at some level, in ways that depend on the language’s particular ranking of constraints governing prosodic structure. The language’s “post-lexical” phonology (in some appropriate, architecture-dependent sense) then governs adjustments in the phonological shape of the resulting combination of clitic and host. Neither the prosodic organization nor the phonological adjustments involved are uniquely identified with clitics, although clitics may well provide essential clues in the determination of how the phonology (including prosody) of a language works.

A full treatment of the linguistic category of ‘clitics’, of course, would have to deal with more than the phonological characteristics of items so designated. In particular, the principles underlying the distinctive (morpho)syntactic behavior of “Special Clitics” must be elucidated. Linguistic items that show clitic behavior in the morphosyntactic sense are usually, though not always, prosodically deficient and thus phonologically clitic as well. The analysis of this dimension of the (not entirely homogeneous) class of ‘clitics’ would, however, take us much too far afield in the context of the present volume, and the interested reader can only be referred to Anderson 2005 for the development of one view.
References


