The behavior of morphemes like *qie* in Chinese: morphologically or prosodically bound?

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0 Introduction

In this paper I will make the claim that the Chinese morpheme *qie*, which is commonly recognized as a bound morpheme in compound words related to stealing, can also be used as an independent verb whose usage is heavily restricted by the prosodic word (Prwd) constraint. This constraint, which will be explained in greater detail in section 2.1 of this paper, requires that all words in Chinese be bisyllabic. Verbs like *qie* are under unusual pressure to conform to this constraint. This leads to an unusual distribution for verbs like *qie*, where the verb is required to appear next to an element together with which it can be reanalyzed as a Prwd.

In the first section I will outline the unusual distribution of words like *qie*. The focus of this paper will be the use of *qie* outside of lexical compounds, and as such I will demonstrate that many apparent lexical compounds involving *qie* are in fact syntactic.

In the second section I will discuss the general tendency in Chinese for words to be bisyllabic in light of the concept of a prosodic word constraint. I will also look at a prosodic constraint proposed by Inkelas & Zec (1990) that requires that syntactically branching phrases receive greater stress than syntactically nonbranching phrases. This prosodic constraint is also active in Chinese, and I will cite another type of prosodic

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reanalysis proposed by Dong (1998) to be motivated by a violation of this branching constraint.

In the third section I will compare the reanalysis proposed in Dong (1998) to that of VPs containing *qie*, noting that both are reanalyses of the prosodic structure in order to satisfy the violation of a prosodic constraint.

In the fourth section I will discuss three different accounts for this reanalysis – syntactic movement, reanalysis of the phonological phrase, and phonological cliticization. I conclude that the VP reanalysis discussed here and in Dong (1998) is most similar to the phonological attachment of clitics. Without going into great detail about the mapping of phonological phrases, I note that this analysis would allow for a simpler algorithm for the assignment of phonological phrase structure.

1.0 *Qie* vs. bound morphemes

The majority of Chinese words are bisyllabic and bimorphemic, and in general each syllable is associated with a particular meaning and can thus be considered a morpheme. Bisyllabic but monomorphemic words, such as *hudie* 'butterfly', are very rare in Chinese. Some of the morphemes found in Chinese compounds may also be used as independent words, while others are morphologically bound and may only appear as elements of compound words. Consider the bimorphemic compound *youyong* 'to swim', in which the first morpheme is free and the second morpheme is bound:

(1)	a. *youyong*	swim-swim	V	'to swim'
	b. *you*	swim	V	'to swim'
	c. **yong*	swim		

This difference is demonstrated in the following contrasting sentences:

John Crespi, Wol-A Kang, Alan Berkowitz, and Mien-Hwa Chiang. Also thanks to Susan Lipsett and Pen-

(2) a. Ni neng youyong duoshao mi?
2p can swim how.many meters

"How many meters can you swim?"

b. Ni neng you duoshao mi?
2p can swim how.many meters

"How many meters can you swim?"

c. *Ni neng yong duoshao mi?
2p can swim how.many meters

Yong is clearly a bound morpheme and unable to appear as a full word in any situation. The behavior of morphemes like *qie* 'steal' is more complicated. Some examples of words with *qie* include:

(3)

a.	*tou-qie*	steal-steal	V	'to steal'
b.	*dao-qie*	thief-steal	V	'to embezzle'
c.	*qie-ju*	steal-seize	V	'to usurp'
d.	*qie-zei*	steal-thief	N	'thief'

Tou 'steal' is a free morpheme, while *qie* is generally held to be a bound morpheme. The distribution of *qie*, however, is freer than that of a fully bound morpheme such as *yong* 'swim' in (1) above. Although *qie* is unacceptable as a verb in a canonical construction, it is acceptable in the passive or Bei construction. This difference was first identified by Reynolds (1995). The difference in acceptability according to syntactic structure is shown below:

(4) a. Wo de shouji *bei* *qie* le
1S GEN cellphone BEI steal ASP

"My cellphone was stolen."

b. *Ta *qie* le wo de shouji.

Pen Chen for reading drafts of my thesis.

3S steal ASP 1S GEN cellphone

"S/He stole my cellphone."

This contrast is not found with truly bound morphemes such as *lue* 'plunder' (from *lueduo* 'plunder'):

(5) a. Lujun *lueduo* le Zhangsan de laojia.
Army plunder ASP Zhangsan GEN hometown.

"The army plundered Zhangsan's hometown."

b. *Lujun *lue* le Zhangsan de laojia.
Army plunder ASP Zhangsan GEN hometown.

c. *Zhangsan de laojia *bei* *lue* le.
Zhangsan GEN hometown BEI plunder ASP.

Although *lue* 'plunder' can be considered a morpheme it is bound in both canonical and passive constructions. Morphemes like *qie* are thus unusual in that they are bound in canonical position but free in the Bei passive construction. Other morphemes of this type include *bu* 'arrest', *hai* 'harm' and *dao* 'steal'. Although *qie* is the only word investigated in this paper, it is assumed these other verbs will exhibit the same properties as *qie*.

1.1 *qie*-V (V-V) constructions

Qie may be used as a full verb if it is followed by a second verb indicating the result of the action. These *qie* + V constructions are not compound words, but rather syntactic constructions where the second verb indicates the result of the first verb. These V-V constructions are known as resultative verbs. Consider the following examples:[1]

(6) Heike zhe ci keneng *qie-zou* le Weiruan gongsi zui xin
Hacker this time probably steal-leave ASP Microsoft company most new

banben de shichuang caozuo xitong
edition DE Windows operate system

"This time, hackers probably stole [got away with] Microsoft's newest edition of the Windows operating system.[2]

(7) Heike *qie-de* Yamasun shi wan yonghu ziliao.
'Hacker steal-obtain Amazon ten ten-thousand user data'

"A hacker obtained [illegally] 100,000 pieces of user data from Amazon[.com]"

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[1] Abbreviations used in this paper include:

ASP	aspect
Q	question marker
GEN	genitive marker
BEI	*bei* – a verb used in passive sentences
BA	*ba* – a marker of a preverbal object NP
VR	resultative verb
VRR	resultative verb with bisyllabic 'result' verb
VO	verb-object construction
VOO	verb-object construction with bisyllabic object
1S / 1P / 2S / 2P / 3S / 3P	person-number agreement

[2] A note on the examples:

Most example sentences in this paper come from sources on the Internet. Some of these sources are newspapers, while the rest come from different kinds of written Chinese, much of which is less formal than newspaper Chinese. I have avoided any sources that are extremely formal in tone, as well as examples drawn from classical Chinese.

In this paper I will make the assumption that written Chinese is a viable set of data, although it is not the same set of data as spoken Chinese. This assumption is problematic, as regional linguistic variations as well as the writing system interfere with written Chinese in complicated ways. Many of the sentences which I will call grammatical are in fact quite marginal, and the difference between grammatical and ungrammatical sentences is not the same for all speakers.

These resultative verb (VR) constructions are not compound words. Packard (2000) explains that some VR constructions are lexical compounds, while others are syntactic. A useful test in distinguishing the two types of VR constructions is to see if the second (resultative) verb (V_2) retains its original argument structure. Packard argues that a VR is syntactic iff the argument structure of V_2 is preserved in the sentence. If the argument structure is not preserved, the VR is lexical. Packard provides the following example:

(8) Zei$_i$ nazou le pibao$_j$.
thief take-go ASP handbag

"The thief took the handbag."

Morpheme:	Definition:	Argument structure:
na	'take'	[Agent$_i$ Theme$_j$]
zou	'walk, go'	[Agent$_i$]
nazou	'take away'	[Agent$_i$ Theme$_j$]

(Packard 2000 254)

The fact that *zou* 'go, walk away' modifies the subject NP *zei* 'thief' (it is the thief who does the walking away, not the bag) indicates that the V_2 *zou* is able to assign theta-role to the subject NP. By arguing that the agent theta-role percolates from the V_2 *zou* 'go, walk away' up to the rest of the sentence, Packard shows that *nazou* and other VRs expressing attainment are syntactic rather than lexical. Both *qiezou* and *qiede* from (6) and (7) belong to this category of 'attainment' VRs, and in both cases the V_2 modifies the subject NP, which is external to the VR. Thus the *qie* VRs discussed above are syntactic.

The fact that *qie* cannot stand alone without a resultative complement shows that it is in fact bound in some way. This boundedness is not morphological, however. The broad range of possible resultative complements for *qie* VR constructions, combined with the observation made above that some *qie* VR constructions are syntactic rather than

lexical in nature, indicates that *qie* is not morphologically bound in *qie* VR constructions, but rather stands as a syntactically independent unit.

1.2 V-*qie* (V-V) constructions

The standard sentence structure in Chinese is SVO, although a so-called "passive" construction may place the logical object in subject position, creating an apparent OSV word order. The structure of a standard sentence is NP_{subj} VP NP_{obj}, and the structure of a passive sentence is: NP_{obj} *bei* (NP_{subj}) VP , where a passive marker *bei* is placed between the subject and the main verb. The passive construction is thus also known as the Bei construction. The logical subject N_{subj} is optional in a Bei sentence, and Ting (1998) proposes different syntactic structures for the regular "long" passive and the subject-less "short" passive. Examples of the standard and Bei constructions are given below:

(9) a. Standard:

Lisi da le Zhangsan.
Lisi hit ASP Zhangsan

"Lisi hit Zhangsan."

b. Long passive:

Zhangsan bei Lisi da le.
Zhangsan BEI Lisi hit ASP

"Zhangsan was hit by Lisi."

c. Short passive:

Zhangsan bei da le.
Zhangsan BEI hit ASP

"Zhangsan was hit."

Qie is acceptable as a lone verb when it is part of a subject-less Bei construction, but unacceptable when any element intercedes between *bei* and *qie*:

(10) a. Xiaofei ka li de qian bei *qie* le.
'Expense card in GEN money BEI steal ASP.'

"Money from the expense card was stolen."

b. *Xiaofei ka li de qian bei wo de pengyou *qie* le.
'Expense card in GEN money BEI 1S GEN friend steal ASP'

c. *Xiaofei ka li de qian bei mimi-de *qie* le.
'Expense card in GEN money BEI secretly steal ASP'

d. Xiaofei ka li de qian bei wo de pengyou *tou* le.
'Expense card in GEN money BEI 1S GEN friend steal ASP'

"Money from the expense card was stolen by my friend."

e. Xiaofei ka li de qian bei mimi-de *tou* le.
'Expense card in GEN money BEI secretly steal ASP'

"Money from the expense card was secretly stolen."

Note that an interceding element between *bei* and the verb is perfectly acceptable with most verbs, such as the free morpheme *tou* 'steal'. *Qie,* however, must be immediately adjacent to *bei*. Note also that the interceding element in (10c) is not a subject, so the difference in acceptability between the *qie* sentences in (10) is not simply a difference between the Long Passive and the Short Passive.

I will follow Ting's (1998) proposed structure for Bei sentences which calls *bei* a biclausal verb[3]. Assuming that *bei* is a verb, *bei qie* is a V-V construction similar to a VR construction like *qie-zou* in (9). Given that *qie-zou* is acceptable, it is not surprising that *bei qie* is also possible, as both are V-V constructions in a similar syntactic relationship.

[3] The biclausal analysis was first adopted by Hashimoto (1971).

The difference is that in (9) *qie* is the first element of a V-V sequence, while in (10) it is the second element of a V-V structure.

Reynolds (1995) (cited in Ting (1998)) argues that *bei qie* is one word, where *bei* is a morpheme marking passivity rather than a full word. The advantage of this analysis is that it explains the ill-formedness of (10b), which would violate the Lexical Integrity Hypothesis by breaking up a word (*beiqie*) with the logical subject NP *wo de pengyou*. A disadvantage of Reynolds's analysis is that it is an exception to the general analysis of *bei* as a syntactic, rather than morphological, item. The distribution of *bei qie* appears to be identical to that of syntactic phrases like *bei zhua* 'was caught' and *bei sha* 'was killed', where *zhua* and *sha* are both completely unbound verbs.

Reynolds's analysis of *bei qie* as a single word is unnecessary if we consider the distribution of *qie* in other situations. As has already been mentioned, *bei qie* is a V-V construction similar to *qie-zou*. This suggests that the difference between (10a-e) might have more to do with a special property of verbs like *qie* rather than with an exceptional analysis of *bei*. Further evidence to indicate the acceptability of a V-*qie* construction comes from the following example (albeit marginal), taken from a newspaper article:

(11) Zhongguo yinhang bali fenhang zao-qie sishi wan ouyuan.
'Bank of China Paris branch suffer-steal 40 ten-thousand euro'

"40 thousand euros were stolen from the Paris branch of the Bank of China.
(The Paris branch of the Bank of China suffered the theft of 400,000 euros.)"

Zao in (11) is like a passive structure, where the passive marker *bei* has been replaced with a less commonly used word *zao*. (11) has a similar structure to (10a), although the word *zao* is in much less common usage than *bei*. The fact that *zao qie* is at least marginally acceptable indicates that something about the V + *qie* structure renders *qie*

acceptable. It would be hard to claim that *zao qie* is a word, given that its usage is much more limited than that of *bei qie*, which is itself uncommon. On the other hand, the data in (10a-e) and (11) indicate that *qie* itself is unacceptable when it is separated from an adjacent V.

1.3 *qie* + Obj (VO) constructions

Verb-Object (VO) constructions are common in Chinese. A VO consists of a verb followed by an object. Some VO constructions are entirely lexical, some are entirely syntactic, while others are both lexical and syntactic. In other words, some VO constructions should be analyzed as lexical compounds, others should be analyzed as syntactic constructions, and still others can be either lexical or syntactic. Packard (2000) provides the following examples:

(12) a. Lexical VO compounds:

chi-fan	eat-rice	'to eat (intransitive)'
fu-ze	carry-duty	'to be responsible for'
chu-ban	emit-edition	'to publish'

b. Syntactic VO constructions:

chi-mian	eat-noodles	'to eat noodles'
chi-fan	eat-rice	'to eat rice'

c. Syntactic / Lexical gray area:

shui-jiao	sleep-nap	'to sleep'
du-shu	read-book	'to study'

Lexical VO compounds like those in (12a) are generally inseparable; the object may not take a modifier, and aspect markers that cliticize onto the verb attach to the end of the lexicalized object. Syntactic VO constructions like those in (12b) are separable. The object can take modifiers, and aspect markers attach to the head verb rather than the

object. "Gray" words like those in (12c) are ambiguous with respect to these properties. The explanation for this ambiguity is that "gray" VOs are lexical but may be reanalyzed as syntactic constructions. The reanalyzed VO can then be broken up by modifiers or aspect markers. Purely lexical VOs may not be reanalyzed as syntactic constructions.

Qie is occasionally found in VO constructions. This type of usage is seen mainly in written Chinese, particularly in Chinese that has been written by lawyers. Some examples of these V-O constructions are listed below:

(13) a.	*qie-dian*	steal-electricity	'To steal electricity'
b.	*qie-shui*	steal-water	'To steal water [utility]'
c.	*qie-qi*	steal-gas	'To steal gas [utility]'
d.	*qie-mi*	steal-secret	'To steal secrets [secret information]'

These constructions are often morphologically derived or otherwise used outside of the canonical position for a V-O structure, as in:

(14) a.	*qie-dian-zhe*	steal-electricity-NOM	'One who steals electricity'
b.	*qie-dian-xingwei*	steal-electricity-behavior	'Electricity-stealing behavior'
c.	*fang-qie-mi*	oppose-steal-secret	'Anti-secret-stealing (software, etc.)' [i.e. Internet security software]
d.	*qie-mi-shou*	steal-secret-hand	'secret-stealing agent' [spies]

In any case, *qie* + O (VO) constructions do exist, and their usage obeys interesting restrictions, namely:

(15) a. The *qie* VO construction appears primarily in the form of a noun or adjective that has been morphologically derived from the VO. It is often found in non-predicate position, or with a noun-forming morpheme like *–zhe* 'one who Xes', *fan-* 'opposing X' or *fang-* 'anti-X'.

b. The V-O construction, unlike syntactic V-O constructions in Chinese, may not be separated by aspect markers such as *-le* or *–guo*.

c. The object is semantically restricted to something intangible that is stolen with no visible victim, such as electricity, water, natural gas, etc. Furthermore, the *qie* V-O almost always refers to the theft of a public utility.

The third restriction is the easiest to explain. *Qie* usually refers to the theft of intangible things. This distinguishes it from a verb like *tou*, which selects a more general set of objects. Also, the use of *qie* + Obj to describe a certain kind of crime probably comes from Lu Xun's famous short story Kong Yiji. The title character in Kong Yiji is a poor man with scholarly aspirations who defends his theft of books with the justification "*qie shu bu suan tou*" ('taking books doesn't count as stealing'). This is one of the story's most memorable lines, and for a lot of people it represents the mistaken justification of an act that is ethically wrong. Note that the usage of *qie* in Kong Yiji is deliberately antiquated. Although I have done no historical research to back this up, it seems that this is the first appearance of *qie* + Obj in modern Chinese, or at least the usage after which later *qie* + Obj constructions are modeled.

The following example was found in a power company's warning about the punishments for stealing electricity:

(16) Qie dian bu suan tou
'take electricity not count steal'

"Taking electricity is not stealing" (apparently a reference to Kong Yiji)

This example was placed in quotation marks to show that the power company did not agree with this attitude.

Qie + Obj appears to be a new construction, limited mostly to warnings about stealing public utilities. This fact alone does not indicate that *Qie* + Obj is not a viable syntactic construction. So the semantic restrictions on the *qie* + Obj construction are not surprising.

The first and second restrictions are more difficult to explain, but for the moment it should be enough to point out that the second restriction (15b), that the *qie* may not be separated from its object O, is similar to the restriction proposed above in 2.1 and 2.2 for the V-V constructions, where *qie* may not be separated from its adjacent V.

If we assume that (15b) is due to the same restriction as that of the *qie* V-V constructions, then (15a) begins to make sense. The use of the *qie* + Obj construction as the main verb of a sentence is strongly limited by the inability of *qie* to separate from its object O. This kind of separation, illustrated in (17) below, is perfectly acceptable for most syntactic V-O constructions in Chinese, and the impossibility of such separation limits the distribution of the *qie* VO.

(17) a. Ta *da* le *qiu*.
'3S hit ASP ball'

"He played ball."

b. Ta *da qiu da* le liang ge xiaoshi.
'3S hit ball ASP hit two CL hour'

"He played ball for two hours."

c. Ta *da* le liang ge xiaoshi de *qiu*.
'3S hit ASP two CL hour GEN ball'

"He played ball for two hours." [lit: He played two hours of ball]

Da-qiu 'hit-ball' is an example of a syntactic VO construction. In (17a) the verb *da* is separated from the object *qiu* by the aspect marker *le*. In (17b) the verb *da* is

reduplicated to accommodate the duration / frequency (DF) phrase *liangge xiaoshi* 'two hours'. In (17c) the object *qiu* is modified by the DF phrase *liangge xiaoshi* 'two hours'.

The examples in (17) show the two major strategies used to accommodate extra constituents after a VO in Chinese, namely reduplication of the verb as in (17b), and the insertion of the second constituent as a modifier internal to the object NP in (17c). If *qie* can not be separated from its Obj in a *qie* + Obj construction then these methods for incorporating aspect and additional constituents are not available to *qie* + Obj constructions. It is therefore not surprising that the *qie* + Obj VO construction would have more limited distribution than other VO constructions.

The data agree with this prediction, as seen below:

(18) a. *Zhangsan qie le dian.
'Zhangsan steal ASP electricity'

b. ?Zhangsan qie-dian le.
'Zhangsan steal electricity ASP'

"Zhangsan stole electricity" [committed the crime of stealing electricity]

c. *Zhangsan qie le jiazhi liang wan duo RMB de
'Zhangsan steal ASP value two ten-thousand more RMB GEN

dian
electricity'

"Zhangsan stole more than twenty thousand RMB of electricity."

(18a,c) are unacceptable because *qie* is separated from *dian*. The phrase *qie dian le* from (18b) is attested in a only a handful of online sources, so I will assume it is only marginally possible. This indicates that *qie* + Obj VOs are different from the types of VOs outlined in (12) above. (18a,c) show that, unlike most syntactic VOs, *qie* + Obj VOs may not be broken up to accommodate aspect markers or modifiers. (18b) shows

that, unlike lexical VOs, *qie* + Obj do not readily take aspect markers after the VO compound.

This unusual behavior of *qie* + Obj VOs is consistent with the general observation that *qie*, while not morphologically bound, must appear with some other element such as a verb or an object.

1.4 A generalization

The data mentioned above indicate a general pattern for *qie* + V, V + *qie*, and *qie* + Obj constructions. *Qie* never appears alone as the matrix predicate in modern Chinese, but is acceptable when it is located within *qie* + V, V + *qie*, and *qie* + Obj constructions. These constructions have been shown to be syntactic rather than lexical, which shows that *qie* cannot be analyzed as morphologically bound. *Qie* must instead be analyzed as a morphologically free verb that somehow needs the support of another element within a VP. Note that the possibility of V + *qie* constructions like *bei qie* and *zao qie* indicate that *qie* is not necessarily the head of this VP.

The following generalization is enough for now:

(19) *Qie* is a member of a sub-class of verbs that are morphologically free but (paradoxically) unable to appear outside of a complex VP.

In other words, *qie* may not constitute an entire VP, unless that VP is directly subordinate to another VP, as in *bei qie*. I will come back to this generalization later.

2 Evidence for Minimal Word in Chinese

Lü Shuxiang (1963) discussed a tendency in Chinese to avoid mono- or trisyllabic phrases. One example he brought up was the difference in forms of address for mono- and bisyllabic last names. Most Chinese surnames are monosyllabic, such as Zhang, but there are a few bisyllabic surnames, such as Ouyang. Lü noticed that when calling out to

a friend named Zhang, the prefix *lao* 'old' is usually added as in (20a), while the prefix is strongly avoided with two-syllable last names, as in (20b). The (*) examples in (20c,d) are not ungrammatical, but are strongly avoided by speakers.

(20) a. Lao Zhang!

old Zhang

"Old Zhang!"

b. Ouyang!

Ouyang!

"Ouyang!"

c. (*)Zhang!

d. (*)Lao Ouyang!

Lü noticed the same pattern with page numbers. The prefix *di* is used to mark ordinal numbers, where *yi* 'one' becomes *di yi* 'first', and so on. Lü observed that this prefix is absolutely necessary with numbers under ten and generally avoided with numbers over ten. Note that all Chinese numbers ten and under are monosyllabic, while all numbers over ten are polysyllabic. The following contrast obtains:

(21) a. *di yi* ye

DI one page

"page one"

b. *wushi* ye

fifty page

"page fifty"

c. **yi* ye

d. (*) *di wushi* ye

Lü also observed that the presence of the genitive marker *de* is sensitive to the number of syllables in a complex NP. According to the syntax, *de* assigns genitive case to a preceding NP. In this sense *de* is a phrasal clitic just like the English possessive marker *'s*. Lü observed that *de* is generally left out in an $N_{\sigma\sigma} + N_{\sigma\sigma}$ compound as in (22a), while it is obligatory in an $N_{\sigma\sigma} + N_{\sigma}$ compound as in (22b).

(22) a. wei-da ren-wu

great personage

"great personage"

b. wei-da de ren

great DE person

"great person"

c. *wei-da ren

d. wei-da de renwu

great DE personage

"great personage"

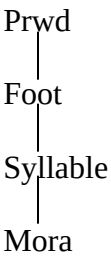
Note the difference between the first phenomenon observed by Lü in (20) and those in (21) and (22). (20) is a constraint on naming (which is akin to spontaneous word formation - see Itô 1991), while (21) and (22) are the result of a constraint on the presence of clitics. The examples in (21) illustrate that this tendency towards bisyllabicity does not operate over the entire NP [*di* X *ye*], but just over the first component of the NP, *di* X. The examples in (22) indicate the presence of a constraint that operates over the second half of the NP linked by the clitic *de*.

2.1 The Prwd Constraint

Lü was unable to come up with an adequate explanation for these phenomena, and merely raised the issue in order to encourage future investigations. A strong theoretical basis from which to approach the issue came with the development of prosodic morphology and the concept of the Prosodic Word.

A Prosodic Word (Prwd) is a word that conforms to the ideal prosodic form for words in a particular language. McCarthy & Prince (1990, 1993) rephrased a generally accepted hierarchy of prosodic constituents into the basis for a constraint on phonological representation. The Prosodic Hierarchy, first developed by Selkirk (1980), goes from the level of the Mora to the level of Prwd. Each element in the Prosodic Hierarchy must be built from elements directly below in the hierarchy. A Prwd must be composed of feet, feet must be composed of syllables, and syllables must be composed of moras. The Prosodic Hierarchy is shown below:

(23) Prosodic Hierarchy:



McCarthy & Prince (1990) proposed another condition, Foot Binarity, shown below:

(24) Foot Binarity

Feet are binary under syllabic or moraic analysis.

(24) requires that each foot be composed of either two syllables or two moras, depending on the nature of the particular language. Feng (2001b) takes the position that Chinese feet are binary with respect to syllables.

According to the Prosodic Hierarchy and Foot Binarity, the minimal prosodic word in a language must be built from feet, which must be either bimoraic or bisyllabic. A minimal Prwd, therefore, must be bimoraic or bisyllabic, according to the rules of the particular language. A Chinese Prwd according to Feng (2001b) must be bisyllabic.

The Prosodic Hierarchy and Foot Binarity are proposed in terms of Optimality Theory, as principles that produce violable constraints which select from a large set of inputs, rather than as rules which lead to transformation. In this paper I will assume that prosodic conditions like Inkelas & Zec's (1990) rule (see above), Foot Binarity and the Prosodic Hierarchy are constraints that may be violated. Feng (2001a) mentions that the prosodic constraints on the Ba construction (discussed in 2.3.1 below) may be violated to meet the metrical requirements of verse.

There are a large number of monosyllabic words in Chinese that do not conform to Prwd, although these words have generally been in the lexicon for a long time. Prwd, then, is a relatively weak constraint in Chinese that has more constraining power over newly formed words than on the older words and function words which constitute most Chinese monosyllables.

2.2 Prosodic analysis of the minimal word constraint in Chinese

Feng (2001b) argues convincingly that V-R constructions are syntactic and undergo a reanalysis in order to conform to the Prwd constraint. Feng makes similar

arguments for V-O constructions and A-N constructions. I will repeat two of Feng's proposed templatic constraints below:

(25) a. Templatic constraint on VO compounds

VO-Compd = Prwd

"The VO compound is a prosodic word."

b. Templatic constraint on canonical VR construction

VR_{CANO} = Prwd

"The VR in canonical ([V R Obj]) structure is a prosodic word."

Feng's argument for the templatic constraint proposed in (25a) is based in part on the difference in syntactic behavior between bisyllabic VO constructions and trisyllabic VOO constructions. VO constructions are treated by the syntax as words, while VOO constructions are treated as phrases. The following sentences (from Feng 2001b) illustrate this contrast.

(26) a. Ta fu-ze baowei gongzuo.
He carry-responsibility security affairs

"He is in charge of security affairs."

b. *Ta fu-zeren baowei gongzuo.
He carry-responsibility security affairs

Fu-ze 'to be responsible' can take an object, but the near-synonym *fu-zeren* cannot. This indicates the presence of a constraint such as that proposed in (25a). Feng does not go into detail about the means by which VO and VR form a prosodic word, or about how exactly the grouping of V and O into a single prosodic word affects the prosodic or syntactic structure of the sentence. Feng's observation that VO and VR form prosodic words is in keeping with the observations made in this paper.

Feng's argument for the templatic constraint proposed in (25b) is based largely on evidence first mentioned by Dong (1998). This evidence is summarized in the next section.

2.3 Lexicalization of V-R phrases

Dong (1998) points out an interesting property of resultative verbs in Chinese. Bisyllabic resultative verbs (VR) can take an object, whereas trisyllabic resultative verbs (VRR) are unable to do so. Dong proposes that VR forms are spontaneously lexicalized and treated by the syntax as bisyllabic verbs having no constituents, whereas VRR[4] forms are unable to lexicalize in the same manner because they would produce a violation of Prwd. This lexicalization is motivated by an interaction between normal stress assignment and a rule proposed by Inkelas & Zec (1990) requiring a syntactically branching node to receive more stress than a non-branching node. In section 2.3.1 I will provide the background information necessary for an understanding of Dong's argument, and in section 2.3.2 I will return a discussion of Dong's proposal.

2.3.1 Evidence of prosodically constrained syntax in Chinese

Liberman & Prince (1977) proposed a simple rule to assign linguistic stress at the sentence level. The Nuclear Stress Rule (NSR) in Liberman & Prince (1977) is as follows:

(27) Nuclear Stress Rule (NSR):
In a configuration $[_C$ A B]:
If C is a phrasal category, B is strong.

[4] VR is a bisyllabic resultative verb construction where both V_1 and V_2 are monosyllabic. VRR represents a trisyllabic resultative verb construction where V_1 is monosyllabic and V_2 (the result verb) is bisyllabic. This notation is also used to represent the syllable structure of VO constructions, where VO is bisyllabic and VOO is trisyllabic, with a bisyllabic object.

This rule assigns stress to the rightmost constituent in a sentence. Although other rules have been proposed for the assignment of stress (cf. Nespor & Vogel 1983, Inkelas & Zec 1995) I will only consider Liberman & Prince's NSR in this paper. Liberman & Prince's NSR is the account of stress assignment assumed in most works I will cite here, including Inkelas & Zec (1990, 1995) and Feng (1995, 2000, 2001a). These theories for sentence-level stress assignment all take syntactic branching into account in order to produce a branching prosodic structure (p-structure) which is similar to syntactic structure but not identical.

Inkelas & Zec (1990) adopt the NSR to explain a phenomenon in Hausa where sentence structure is constrained by a prosodic constraint on syntactic branching. Inkelas & Zec (1990) proposed the following rule:

(28) Inkelas & Zec's (1990) rule:
A branching node must receive more stress than a non-branching node.

Feng (1995, 2001a) extends Inkelas & Zec's (1990) rule to Chinese, arguing that Chinese syntax is governed by the same prosodic constraints on syntactic branching. The prosodic constraints on Ba sentences in Chinese are a key example of this prosodic constraint on Syntax.[5]

The prosodic constraint on Ba sentences requires that the VP within a Ba phrase be syntactically complex (branching). (29) below is an example of this phenomenon. I will label weak and strong nodes as [w] or [s] according to the stress assignment

[5] There are several non-canonical sentence patterns in Chinese in which the standard SVO word order is seemingly abandoned. The two most well known examples of this are the Bei passive construction (see section 1.2 of this paper) and the Ba construction. The standard phrase structure in Chinese is [NP_{subj} VP NP_{obj}]. In a Ba construction NP_{subj} is placed before VP, resulting in the structure [NP_{subj} *ba* NP_{obj} VP]. Unlike *bei*, which is generally analyzed as a biclausal verb following Hashimoto (1971), *ba* is generally held to be a preposition-like marker of a preposed object NP.

predicted by the NSR. Note that stress is relative within a node, so that a node labeled [w] is only weak with respect to its sister, which is labeled [s][6]. The stress pattern of the entire sentence can be recovered from this set of binary weak-strong relationships. One node must be weak, and the other node must be strong. If a node X is strong and its sister node Y is weak, then the set of all nodes under X is relatively stronger than the set of all nodes under Y.

(29) a. Xiaotou hui ba ni de bao qie-zou.
'Thief will BA 2S GEN bag steal-leave'
"Thieves will take your bag [and get away]."

IP
[-]

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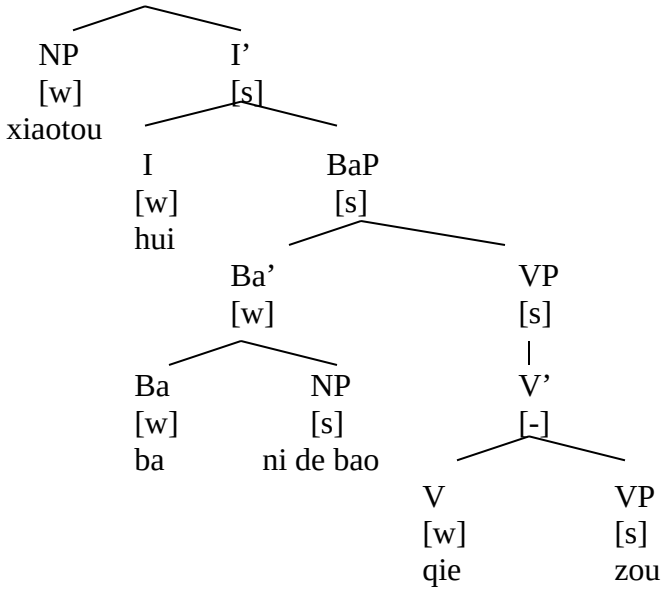
[6] The stress pattern of the whole sentence can be put together based on the relative information, although this is not relevant to the theories discussed in this paper. Liberman & Prince (1977) provide the following formula for computing the "stress number" or prominence ranking of a given node:

i If a terminal node *t* is labeled *w*, its stress number is equal to the number of nodes that dominate it, plus one. If a terminal node *t* is labeled *s*, its stress number is equal to the number of nodes that dominate the lowest *w* dominating *t*, plus one.

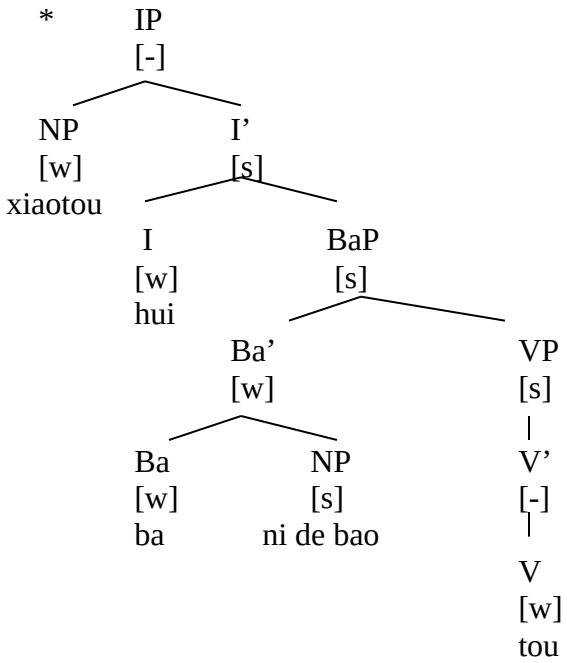
This will predict the following relative stress contour for (29), where 1 is the highest stress and 5 is the lowest stress:

ii. [$_2$ Xiaotou] [$_3$ hui] [$_5$ ba] [$_4$ ni de bao] [$_5$ qie] [$_1$ zou]

For more about this, see the discussion in Liberman & Prince (1977 259).



b. *Xiaotou hui ba ni de bao tou.
‘Thief will BA 2S GEN bag steal’



The problem with (29b) is that the final VP is strong (according to the NSR), but it is a non-branching node. The Ba phrase is weak, and it branches. This is a violation of the rule proposed by Inkelas & Zec (1990), which states that a branching node must be

stronger than a non-branching node. This analysis of prosodically governed syntax in Chinese comes from Feng (1995, 2001a), and serves as the basis for the argument developed by Dong (1998).

2.3.2 Dong's account of prosodically motivated VR reanalysis

Dong (1998) observes that bisyllabic resultative verbs (VR) can take an object, while trisyllabic resultative verbs (VRR) cannot. Dong proposes that a syntactic VR construction spontaneously lexicalizes in order to compensate for a violation of the Inkelas & Zec's (1990) branching condition. Syntactic VRR forms are unable to lexicalize, however, as this lexicalization would produce a violation of another prosodic constraint, namely Prwd. Lexical VRR violates Prwd because, being trisyllabic, it is not composed of binary feet.

Because of this, VRR forms are treated as syntactically complex and, because they come to the left of the non-branching object, violate Inkelas & Zec's rule. VR forms do not violate the branching condition because they are spontaneously lexicalized or reanalyzed as non-branching words. Dong provides the following examples to illustrate this phenomenon:

(30) a. Ta da-sui le boli bei.
'3S hit-shattered ASP glass cup'
"He hit the glass cup such that it became shattered."

b. *Ta da-fensui le boli bei.
'3S hit-pulverized ASP glass cup'
"He hit the glass cup such that it became pulverized."

c. Ta ba boli bei da-fensui le.

‘3S BA glass cup hit-pulverized ASP’

“He hit the glass cup such that it became pulverized.”

d. Ta ku-ya le sangzi.

‘3S cry-mute ASP throat’

“He cried until his throat was mute.”

e. *Ta ku-siya le sangzi.

‘3S cry-hoarse ASP throat’

“He cried until his throat was hoarse.”

f. Sangzi, ta ku-siya le.

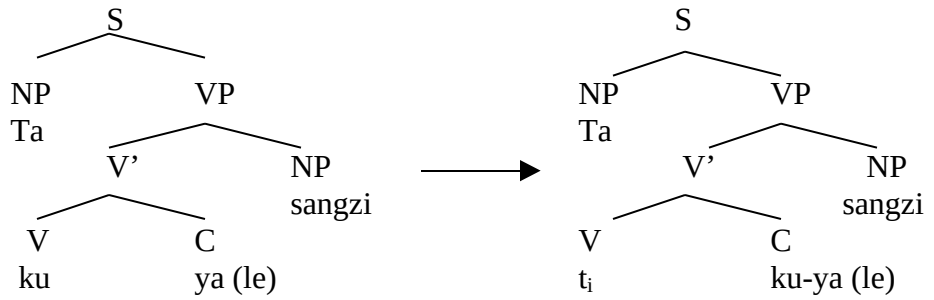
‘throat, 3S cry-hoarse ASP’

“As for his throat, he cried until (it) was hoarse.”

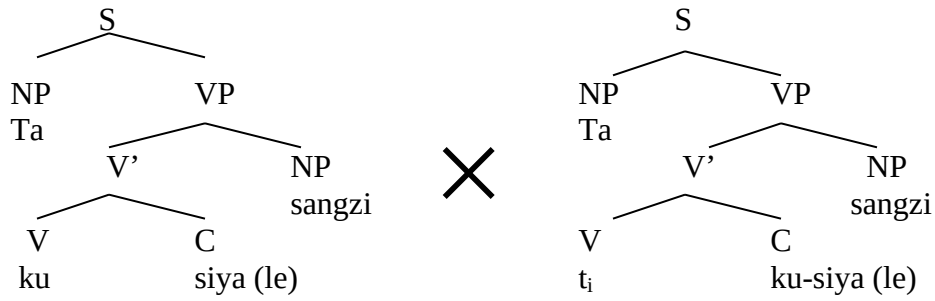
Dong observes that the VRR forms are only acceptable when the object is placed somewhere else in the sentence.

According to Dong’s proposal, the syntax rearranges when faced with a prosodically unacceptable sentence. The main V cliticizes onto the resultative complement R, becoming a syntactically simple polysyllabic verb. A bisyllabic complement, however, cannot join with the main verb because the newly created verb would not conform to Prwd. Remember that newly formed words such as nicknames like those in (20) above and (clitic) + host forms like the page number expressions *di* + number in (21) above are particularly sensitive to the Prwd constraint (see also Itô 1991 for a treatment of word minimality in Japanese nicknames.) The trees in (31) (from Dong 1998) demonstrate this reanalysis:

(31)a. Ta kuya (le) sangzi. “He cried his throat hoarse.” (from 24d above)



b. *Ta ku-siya (le) sangzi. "He cried his throat mute." (from 24f above)



According to Dong, the movement in (31a) is acceptable, while the movement in (31b) is blocked because the resulting word would violate the Prwd constraint by having an uneven number of syllables.

3 A prosodic account for *qie*

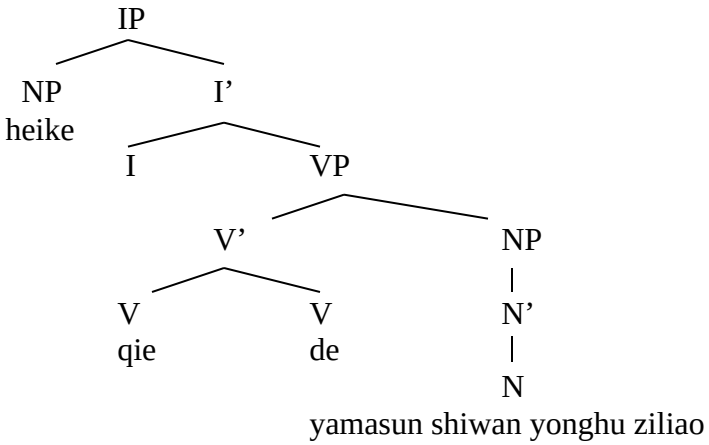
In Section 1 I established that *qie* is not morphologically bound. This argument is based on the acceptability of syntactic VR constructions of the form *qie* + V, passive constructions of the type *bei qie* and *zao qie*, as well as syntactic VO constructions of the type *qie* + Obj. In this section I will reexamine the data in light of the Prwd constraint discussed in section 2. More specifically, I will claim that all acceptable uses of *qie* outside of compound words depend on a prosodic reanalysis similar to the one proposed by Dong (1998) in which syntactic VR forms are spontaneously lexicalized in order to satisfy a prosodic constraint. I also note that all acceptable uses of *qie* outside of

compound words must conform to the Prwd constraint, just as a spontaneously lexicalized VR must conform to Prwd.

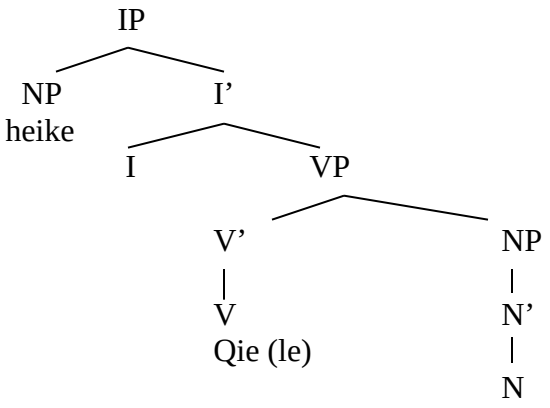
3.1 Syntactic reorganization of the *qie* VP

Dong (1998) explains that the syntax of a VP will adjust in order to satisfy prosodic constraints. This is an example of interaction between the syntax and the prosodic system. I propose that the *qie* VP will also collapse in order to satisfy a prosodic constraint. In this case the prosodic constraint is Prwd. Below I will elaborate the underlying structure of two sentences with *qie* verbs:

(32) a. Heike qie-de yamasun shiwan yonghu ziliao.
'Hacker steal-obtain Amazon 10 10,000 user data'
"A hacker made off with 100,000 (pieces of) Amazon(.com)'s user data"



b. *Heike qie (le) yamasun shiwan yonghu ziliao.
'Hacker steal Amazon 10 10,000 user data'
"A hacker made off with 100,000 (pieces of) Amazon(.com)'s user data"



Note that the aspect marker *le* is not relevant to the acceptability of the sentence[7]. The underlying structures of both examples in (32) are unacceptable because *qie* violates the Prwd constraint. One can be rescued, however, and the other cannot. In each example, *qie* stands alone as a monosyllabic verb, which is unacceptable for words like *qie*. The presence of the second verb *de* 'to obtain' in (32a), however, allows for a reanalysis of the two verbs *qie de* as a single verb *qie-de* according to Prwd. The reanalyzed structure of (32a) is shown in (33) below.

(33) IP

[7] The aspect marker *le* is generally treated as a function word which is invisible to prosodic analysis. Inkelas & Zec (1995) mention that function words do not receive their own domains for prosodic rules. Observe the following pair in English, paraphrased from Inkelas & Zec (1995):

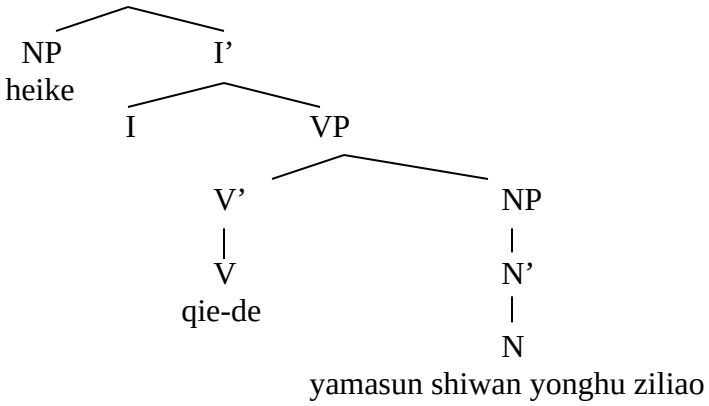
i. [Ánnemarìe ate it.]

ii. [Ánnemarìe ate.]

iii. [Ànnemaríe] [ate bèef.]

The rule which changes sentence-level stress in English operates over distinct prosodic domains. (i) is the same as (ii) but different from (iii), which indicates that the pronoun *it* is not recognized by the prosodic structure as a phonological word.

I will try to avoid dealing with *le* in this paper. Note that it is common for newspaper headlines in Chinese to have no aspect marker, as is also the case with English newspaper headlines. Some of the data in this paper come from newspaper headlines, which explain the lack of aspect markers.

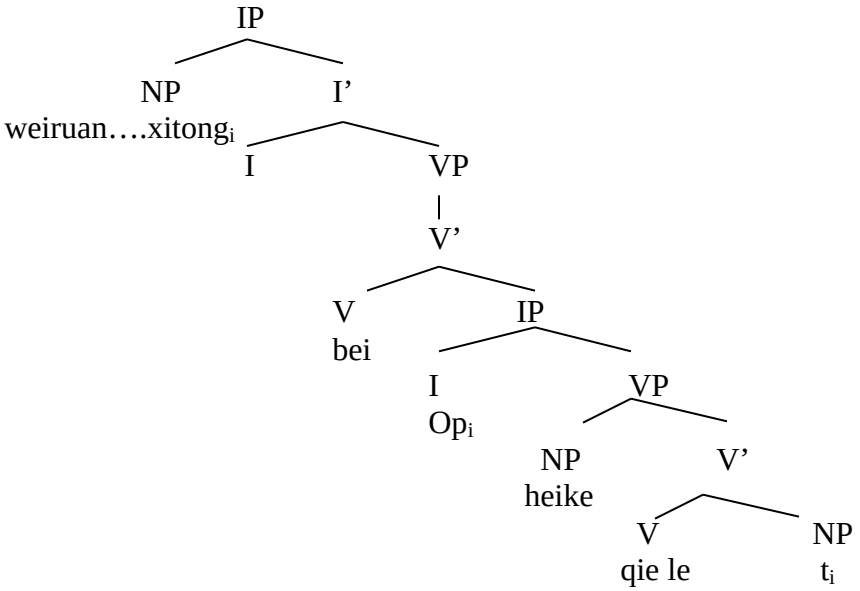


This reanalysis cannot occur, however, if it is blocked by the presence of constituents between the elements to be joined, hence the ungrammaticality of (34) below:

(34) *Weiruan gongsi zui xin banben de shichuang caozuo xitong bei *heike*
'Microsoft most new edition GEN windows operating system BEI hacker

qie le.
steal ASP'

"Microsoft's newest edition of windows was stolen by a hacker."



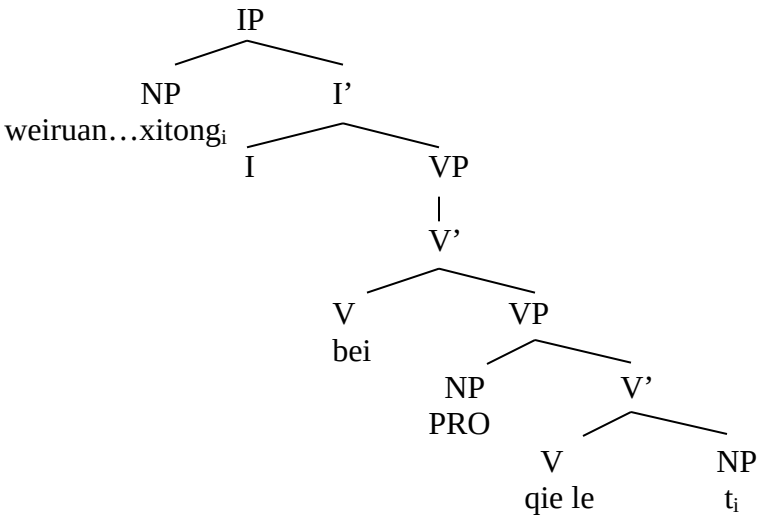
Reanalysis is blocked by the presence of the NP *heike* 'hacker' between the two verbs[8].

[8] I am following Ting's (1998) analysis of Chinese Bei sentences, which claims that Bei sentences with a logical subject also contain a null operator. I have included that operator (Op) only to remain faithful to the

The same thing might happen with the short passive *bei qie*, given that there is a PRO between the two verbs to be collapsed. PRO, however, appears to be irrelevant to the syntactic reanalysis of the Bei VP, because (35) is grammatical.

(35) Weiruan gongsi zui xin banben de shichuang caozuo xitong bei qie le.
'Microsoft most new edition GEN windows operating system BEI steal ASP'

"Microsoft's newest edition of windows was stolen [pirated]."



The syntax generally treats PRO as a constituent, but PRO is apparently ignored here – *bei* + *qie* is impossible with an intervening audible element, but possible with an intervening PRO. This indicates that the reanalysis of a *bei* VP is not syntactic but prosodic, and that only audible constituents are considered by the prosodic system. This is in keeping with existing ideas concerning the co-existence of a branching prosodic structure (p-structure) that preserves only the branching relationship between relevant audible nodes (Inkelas & Zec 1990, 1995). There is no reason to include levels of syntactic structure that are irrelevant to prosodic constraints or stress rules in a graphic

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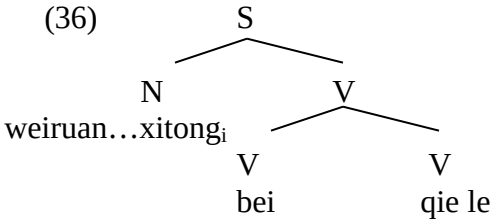
structure proposed by Ting; it of no interest to us here. Note also that Ting argued for a lexical analysis of *bei qie*, in which case there would not be a PRO between *bei* and *qie* in (35). I am arguing against the lexical analysis of *bei qie*.

representation of the p-structure. The categories of relevant nodes should be preserved, however, as prosodic rules such as the Prwd constraints can take syntactic categories into account (McCarthy & Prince 1998). The trees used in this paper will only consider prosodically relevant information. New evidence that some syntactic feature is prosodically relevant would obviously motivate a more complex representation of prosodic structure.

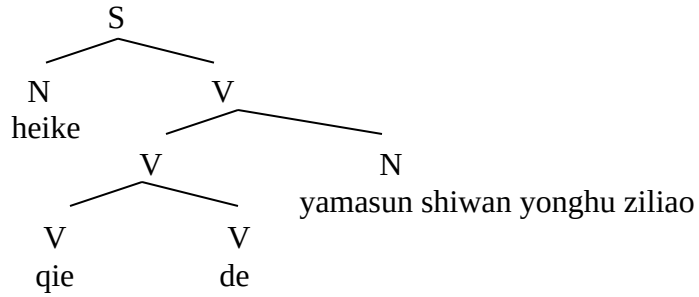
After removing all of the irrelevant levels, the p-structure of (35) would look like this:

(36)



and the p-structure of (33) would be like that in (37):

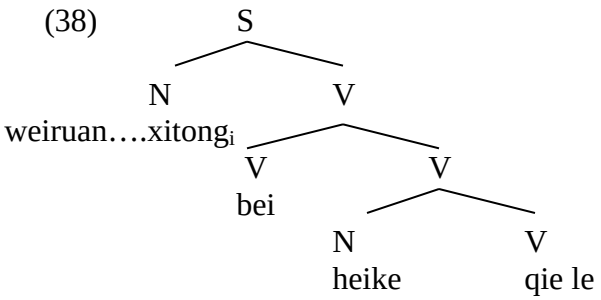
(37)



It is now easier to see the similarity in p-structure between the *qie* + V construction and the *bei qie* construction. In each case, a pair of sister Vs merge together to form a single V, in order to satisfy Prwd.

Compare the simplified p-structures of (36) and (37) with that of (38), the p-structure derived from the prosodically ill-formed (34):

(38)



The problem with (34) is made clearer in (38). An interceding constituent blocks the reanalysis of *bei* and *qie*.

3.2 Reanalysis of the *qie* + Obj VP

It is possible to argue that *qie* + Obj VO structures undergo a similar prosodic reanalysis to that of *qie* V-V constructions. There is an obvious parallel between VO structures and V-V structures.

It was argued in section 1.3 that the *qie* + Obj VO construction is syntactic rather than lexical. This argument was based on the unusual properties of *qie* + Obj VOs with respect to placement of aspect markers and modifiers as demonstrated in (18). It was noted that the object of *qie* cannot be modified, and that aspect markers cannot come between *qie* and its object. It was also noted that aspect markers do not readily come after the VO, as would be natural with a lexicalized VO compound. It was argued that *qie* + Obj is in fact a syntactic construction, but unlike other syntactic VO constructions, the verb cannot be separated from its object. This is attributed to the queer properties of verbs like *qie*, which appear to depend on a neighboring verb or noun to be acceptable.

More evidence that the *qie* + Obj constructions are syntactically complex VPs that have been reanalyzed to conform to Prwd is the fact that *qie* + Obj constructions seem to always conform to the shape of the minimal Prwd. *Qie* + O constructions abound, but

trisyllabic *qie* + OO[9] constructions do not appear. A bisyllabic synonym of *qie* can be used to accommodate a bisyllabic object, resulting in the alternation in (39)[10].

(39) a. qie dian

steal electricity

b. *qie dianliang

steal electricity

c. daoqie dianliang

steal electricity

The data in (39) indicate that *qie* + Obj must conform to Prwd. McCarthy & Prince (1995) claim that Prwd may also apply at the syntactic level, and the templatic constraints (19a,b) proposed by Feng (2001b) also allow for the application of a Prwd constraint at the syntactic level. McCarthy & Prince (1995) also mention that a syntax-level Prwd constraint may select certain syntactic categories and ignore others.

There is some evidence, then, that syntactic *qie* + Obj constructions are constrained by Prwd.

3.3 An explanation for the strange behavior of words like qie

It has been demonstrated that verbs like *qie* are heavily constrained by Prwd, but the obvious question remains: What makes verbs like *qie* different? One possible answer to this is that *qie* is an archaic form whose modern usage is uncommon and pretentious. *Qie* is used in place of the more common near-synonym *tou* in order to produce a more educated or literary tone.

[9] Once again, VOO represents a verb plus a bisyllabic object.

Qie certainly has a very marginal status as a Chinese verb. Some speakers think that it is acceptable when accompanied by another verb (as in *qie-zou*, *qie-de* or *bei qie*) while others do not. Other verbs exhibiting the same properties (*bu* 'arrest', *po* 'force', *fu* 'capture') are similarly marginal. Although they are not necessarily marginal as bound morphemes in compound words, they are marginal in their use as verbs.

Newly created words tend to conform to the Prwd constraint, particularly words like nicknames that are created on the spot (Itô 1991). The claim of this paper is that words like *qie*, because of their marginal status, are under the same pressure as newly formed words to conform to the prosodic constraint Prwd. As I mentioned in the introduction, *qie* has a more formal tone than near-synonyms like *tou* and *daoqie*. The use of *qie* as a verb is somewhat pretentious, and it is in fact "new" to the speech of a person who does not ordinarily use such language. A word like *qie*, then, is certainly under greater pressure than a well-established monosyllable like *da* 'to hit' or *tou* 'to steal' to conform to the requirements of the Prwd constraint.

4 Two kinds of clitics: the mechanism of prosodic reanalysis

The data introduced thus far indicate that certain VPs and NPs undergo a reanalysis of some sort in order to satisfy prosodic constraints. We have seen reanalysis of the type mentioned by Dong (1998) in order to satisfy the branching constraint in Inkelas & Zec's (1990) rule. I have claimed that complex V-V sequences of the types *qie* + V and V +

[10] Note that bisyllabic forms such as *daoqie* 'to steal' and 'touqie' are much more common than *qie*. All speakers will agree that *tou* 'steal' is the most common word for stealing. *Daoqie* and *touqie* are less

qie as well as VO constructions of the type *qie* + Obj. undergo reanalysis in order to satisfy the constraint Prwd. An obvious question is: What kind of reanalysis is taking place?

4.1 Syntactic reanalysis

Feng (1995, 2001a) suggests that a violation of the Branching Constraint is sufficient to bring about the raising of the Ba NP. Agreeing with the proposal that prosodic violations can cause syntactic movement, Dong (1998) proposes that the reanalysis of the V-R construction discussed in section 2.3 is syntactic in nature, and that V cliticizes syntactically onto its complement R. Dong shows the V clitic as occupying the same syntactic position as R, which creates a non-branching structure. The main idea behind these two analyses is that prosodic constraints can trigger syntactic movement.

A syntactic reanalysis based on prosodic constraints is difficult to motivate given this data, however. Feng's argument for prosodically motivated syntactic movement is not directly relevant to the topic discussed here, and I will not get sidetracked discussing it. However, it should suffice to say here that an equally plausible explanation for the prosodic constraints on the Ba phrase (mentioned in 2.3.1 above) would involve a simple filter which rejects prosodically unacceptable forms generated by the syntax.

If one assumes the presence of a prosodic structure which is similar but not identical to the syntactic structure there is no reason to predict that a prosodic constraint would motivate syntactic movement.

4.2 Prosodic reanalysis

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common. *Qie* is only marginally acceptable.

Many different algorithms exist for the assignment of prosodic structure. Each algorithm, although ideally universal, is in fact suited to fit data from a particular language and is often less useful when applied to other languages. An example of an algorithm that maps prosodic structure from syntactic structure is shown below:

(40) Phonological Phrase Algorithm: (Inkelas & Zec 1990)

a. Branching Clause: From the bottom up, branching nodes are mapped into phonological phrases.

b. Anti-Straddling Clause: No two phonological words on opposite sides of an XP boundary may be phrased together to the exclusion of any material in either XP.

If we assume that lexicalization to satisfy Prwd must take place within a phonological phrase mapped by something like the Phonological Phrase Algorithm, then we can begin to understand how *qie* might be grouped together with an object or a resultative verb complement to form a prosodic word. However, *qie* is only acceptable within the contexts mentioned earlier in this paper, namely: *qie* + V constructions such as *qie* VRs, V + *qie* constructions such as *bei qie* and *zao qie*, and VO constructions of the type *qie* + Obj. Now consider the following contrast:

(41) a. Zei qiezou (le) pibao.
Thief steal-go ASP handbag

"Thieves stole [and got away with] the handbag"

b. *Zei qie (le) pibao.
Thief steal ASP handbag

c. *Zei qie (le) che.
Thief steal ASP car

Note that according to the Phonological Phrase Algorithm (41b) and (41c) could form phonological phrases such as [*Zei qie pibao*] or [*Zei qie le che*], and these phrases would conform to Prwd. It is difficult to think of a phrase structure algorithm which would allow *bei qie* 'was stolen' and *qie zou* 'stole and got away with' to form a phrase and would also allow V + O to form a phrase while disallowing O + V.

Another difficulty in creating an algorithm to deal with the lexicalization of verbs like *qie* is that *qie* is not acceptable with function words like *ta* 's/he, it' and *le* (ASP). Consider the following data:

(42)	a. *qie qi*	steal-gas	'to steal gas'
	b. **qie ta*	steal-it	'to steal it'
	c. *qie de*	steal-obtain	'to steal [and obtain]'
	d. **qie le*	steal-ASP	'stole'

Again, it is hard to come up with a phonological phrase algorithm which would account for these data.

4.3 Cliticization

Klavans (1985) (among others) argues that the phenomenon known as cliticization actually consists of more than one linguistic process. She observes that there is a difference between the phonological liaison rules associated with clitics and the syntactic inseparability also associated with clitics, noting that these two rules can sometimes operate on different edges of the clitic. For instance, a clitic might undergo liaison with an element to its right, while it is syntactically inseparable from the element to its left.

Both the reanalysis discussed in Dong (1998) and the reanalysis of the *qie* VP can be attributed to phonological cliticization, although real syntactic attachment is hard to motivate. If a phonological clitic is invisible to prosodic structure – for instance, if prosodic structure is mapped after clitics attach – then phonological cliticization would be enough to explain the lexicalization of VR discussed by Dong. This approach would also allow for a simpler phonological phrase algorithm which would still be able to account for the peculiarities of verbs like *qie*. In all three contexts where *qie* is acceptable outside of a lexical compound – *qie* + V, V + *qie* and *qie* + Obj – the element on the left is a verb. If we assume that Chinese verbs behave like phonological clitics, then the *qie* puzzle is easily explained by saying that Chinese verbs will only cliticize to the right. Without attempting to explain why or how a verb might share the phonological attachment properties of clitics, I will discuss the similarities between clitics and verbs below.

There is a clear parallel between the reanalysis of the *qie* VP and the behaviour of clitics in the formation of prosodic words as introduced by Lü (1963) and discussed in section 2 of this paper. A clitic such as *di* (ordinal number prefix) renders a prosodically ill-formed phrase acceptable, and does not adversely affect a prosodically well-formed phrase. In other words, a clitic will alter the phonological shape of an ill-formed phrase only when another constraint is being violated. Consider the following data:

(43)	a. **yi* ye	one page	'page one'
	b. *di yi* ye	DI-one-page	'page one'
	c. *wushi* ye	fifty page	'page fifty'
	d. *di wushi* ye	DI-fifty-page	'page fifty'

Note that sentences (43b,c,d) are all acceptable, while (43a) is prosodically ill-formed. (43d) *di wushi* is three syllables, which would violate Prwd given a uniform assignment of phonological phrase structure. It is acceptable, however, which shows that a clitic will not attach prosodically to its host unless motivated by the violation of a prosodic constraint.[11] Now consider the following examples with *qie*:

(44) a. *bei qie* BEI steal 'stolen'

b. *bei qie-zou* BEI steal-go 'stolen [and gotten away with]'

Both (44a,b) are acceptable. If the verb *bei* cliticizes phonologically with the same strategy as the ordinal affix *di*, then it is easy to understand why (44b) is not treated as an ill-formed trisyllabic compound while (44a) is treated is an acceptable bisyllabe.

By showing a parallel between clitics and verbs with respect to phonological incorporation in Chinese, the data above indicate that an account of V+V and V+O reanalyses should consider the phonological clitic-like properties of Chinese verbs. A more in-depth analysis of this phenomenon, however, is beyond the scope of this paper. The crucial observation here is that an algorithm which maps directly from the syntactic level to produce a phonological phrase structure inside of which two words can be reanalyzed as a single Prwd is unable to handle the peculiar attachment properties of *qie* VPs. An algorithm which maps from the syntactic structure after the attachments of clitics, however, would easily handle the data.

5.0 Conclusion

[11] I haven't studied the other phonological properties of clitics here. I am most interested in how they can rescue an otherwise ill-formed word. True clitics probably attach without regard to prosodic necessity; what is interesting is that their effect on prosodic acceptability seems to be optional.

In this paper I have looked at the behavior of verb phrases in which one element is used pretentiously and therefore is heavily constrained by Prwd. I have provided data to support the argument that phrases like *bei qie, qie zou* and *qie dian* are syntactic rather than lexical. I have looked at the reanalysis of these syntactic V + V and V + O structures when faced with a violation of prosodic constraints, and compared it to the reanalysis of VR phrases proposed by Dong (1998).

Feng (2001b) and Dong (1998) have proposed that this reanalysis is due to the syntactic reanalysis of two verbs into one Prwd. I have argued here that this reanalysis is phonological rather than syntactic, and that the only change motivated by the violation of prosodic constraints is the a phonological attachment of the kind performed by clitics.

This is not to say that prosody does not constrain the syntax. On the contrary, I believe that the data presented here are more easily interpreted in the context of something like Optimality Theory, where a variety of inputs are tested in terms of their violations of ranked constraints, and the winning input is selected. This analysis makes sense because it is hard to imagine a grammar that would generate a resultative complement or a passive marker simply to add an extra syllable to *qie*. A model with multiple inputs is better at explaining the kind of differences discussed in this paper.

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