Category Shifts and Word-Formation Redundancy Rules in Chinese

James H-Y. Tai
Category Shifts and
Word-Formation Redundancy
Rules in Chinese

James H-Y. Tai
The Ohio State University & National Chung Cheng University

Abstract

Major patterns of shifts among grammatical categories in Chinese are identified and formulated as word-formation redundancy rules in lexicon. The paucity of denominal verbs is observed and its theoretical implications are discussed. The asymmetry between nominalization and verbalization is treated as one kind of conceptual constraint, reflecting the iconic tendency of Chinese grammar.

0. Introduction.

The lexicon holds a central place in both traditional grammar and

This is a revised version of Tai (1992), presented at the Third International Symposium on Chinese Languages and Linguistics (IsCLL 3), Tsing Hua University, Taiwan. I am deeply indebted to two anonymous reviewers whose valuable comments have stimulated further thoughts on denominal verbs in general and in Chinese, in particular. This revised version has incorporated their suggestions, and include my responses to their comments. I am also grateful to comments from Professors Huang Shuan-fan, Tang Ting-chi, and Tsao Feng-fu, and other participants at IsCLL 3. I am especially appreciative of my colleague, Marjorie Chan, with whom I have had many discussions on this project. Her invaluable feedback has also been incorporated into this paper. Needless to say, I am solely responsible for any inaccuracies and errors herein.
contemporary syntactic theories. In generative grammar, for example, it is essential to provide lexical items with information about the grammatical category (or categories) to which they belong, in addition to information about subcategorization and thematic relations. The lexicon in generative grammar also contains information on "lexical redundancy", including category shifts and word-formation processes. Thus, a Chinese lexicon, like an English lexicon, must provide information about grammatical categories and category shifts.

The general purpose of this paper is to identify a set of word-formation redundancy rules in the Chinese lexicon. It will focus on the category shifts between nouns and verbs. Thus, verbs that can be derived from nouns, i.e., denominal verbs, and nouns that can be derived from verbs, i.e., deverbal nouns, will be our main concern. The concept of zero derivation will be applied to nominalization and verbalization as well as other types of category shifts in the Chinese lexicon.

A more specific purpose of this paper is to examine the productivity of denominal verbs in Chinese, which has hitherto been largely neglected. Although denominal verbs are abundant in English and many European and non-European languages, they are quite limited in Chinese. It is shown in this paper that denominal verbs are in fact very rare in Chinese; a small group of what seems to be denominal verbs will be shown to have verbal rather than nominal root. Thus, in Chinese, with the exception of hua-suffixation, a Europeanized construction analogous to English '‐ize', noun verbalization is virtually non-existent, although verb nominalization is productive. Hence, there is an asymmetry in Chinese grammar in that names for concrete objects are rarely used as verbs, whereas the names of activities can often be used as nouns. It will be argued that the asymmetry is another reflection of iconicity of the Chinese language, along-side temporal sequence and other iconic motivations (e.g., Tai 1985, 1993).

In section 1, some theoretical background is provided for the discussion of category shifts. Section 2 presents the major category shift from verbs to nouns, with evidence provided to demonstrate the asymmetry
between nominalization and verbalization in Chinese. Section 3 discusses other minor types of category shifts, including causative verb formation, adverb formation, and hua-suffixation as the exceptional case of verbalization. In section 4, the asymmetry between nominalization and verbalization observed in other languages is discussed within the context of universal grammar, where it is argued that the lack of verbalization in Chinese is not due to the paucity of derivational morphology in the Chinese language. The paper concludes with section 5, suggesting that the asymmetry is one kind of conceptual constraint and can be considered as a reflection of the iconic tendency in Chinese grammar.

1. Theoretical Preliminaries.


Despite the paucity of morphology in Chinese, grammatical categories such as nouns and verbs can be defined in terms of their syntactic functions and distribution (cf. Chao 1968; Li and Thompson 1981; Tang 1979, 1989; Tsao 1990; McCawley 1992). Thus, the syntactic and morphological characteristics of nouns in Chinese can be given as in (1) and (2) respectively.

Correspondingly, the syntactic and morphological characteristics of verbs in Chinese can be presented as in (3) and (4).

(1) Syntactic Characteristics of Nouns:

a. Can be modified by 'number+classifier'
   (e.g., yi-ben shu 'a book')

b. Can be modified by subordinative '-de'
   (e.g., ta-de shu 'his book'; gui-de shu 'expensive book',
    ta gei wo-de shu 'the book he gave me')

c. Cannot be modified by negative 'bu'
   (e.g., *bu shu 'not book')

d. Cannot be the A-component in an A-not-A question
   (e.g., *shu-bu-shu 'book-not-book')
e. Cannot be modified by 'dou'
   (e.g., *dou shu 'all book')

f. Cannot be modified by other VP modifiers
   (e.g., *hen shu 'very book', *ye shu 'also book',
    *manmanr shu 'slowly book')

(2) Morphological Characteristics of Nouns:
   a. Can be prefixed by 'a-' and 'lao-
      (e.g., a-yi 'aunt', a-Zhang 'Zhang (surname)'; lao-ban 'boss', lao-Zhang 'old Zhang')
   b. Can be suffixed by '-zi', '-tou', and '-er'.
      (e.g., zhuo-zi 'table', yi-zi 'chair'; shi-tou 'stone', zhen-tou 'pillow'; xiao hair 'small child', huar 'flower')

(3) Syntactic Characteristics of Verbs:
   a. Can be modified by negative 'bu'.
      (e.g., bu lai 'not come')
   b. Can be modified by 'dou'.
      (e.g., dou lai 'all come')
   c. Can be modified by other VP modifiers
      (e.g., hen/ye xihuan 'very/also like', manmanr zou 'slowly walk')
   d. Can be modified by verb measures
      (e.g., lai yi-ci 'come once', ti yi-jiao 'give a kick')
   e. Can occur as the A-component in an A-not-A question
      (e.g., lai-bu-lai 'come-not-come')
   f. Cannot be modified by classifiers
      (e.g., *yi-ge ti 'one kick', *yi-ge da 'one hit')

---

1. However, the verb da cannot be modified by hen 'very', which is a degree adverb that typically modifies stative verbs.
Category Shifts and Word-Formation Redundancy Rules in Chinese

(4) Morphological Characteristics of Verbs:
   a. Can be suffixed by the aspect markers ' -zhe ', ' -le ', and ' -guo ' 
      (e.g., chi-zhe 'eating', chi-le 'ate', chi-guo 'have eaten (before)')
   b. Can form a resultative verb compound, and can be infixed 
      by -bu- and -de- 
      (e.g. da-si 'hit-die', da-de-si 'hit-able-die', da-bu-si 'hit-not-die')

It should be noted here that nouns and verbs are not simple, discrete categories; rather, they are cluster concepts like the prototypes of Rosch and her associates (Rosch and Mervis 1975, Rosch 1978). Thus, each of the above sets of characteristics serve as clusters of properties for nouns and verbs in Chinese. Each property is a sufficient condition and not a necessary condition. These sufficient conditions jointly define prototypical nouns and prototypical verbs. Prototypical nouns exhibit all, or most, of the properties listed above in (1) and (2), while prototypical verbs exhibit all, or most, of the properties listed above in (3) and (4). A noun which exhibits all the properties in (1) and (2), for example, is zhuo -zi 'table', and a noun which exhibit only the properties in (1) would be shu 'book'. A less prototypical noun than 'book' would be ai 'love': ta-de ai 'his love' is grammatical, yi-ge ai, as in zuo yi-ge ai 'to make a love (act)' is less grammatical. Moreover, ai does not possess all the negative properties listed in (1). In the same vein, a prototypical verb is da, 'hit', exhibiting all the properties listed in (3) and (4). Common a-prototypical verbs are you 'have, exist', zai 'be at', and shi 'be'.

From the morphological and syntactic properties listed in (1) through (4) above, one can see that there is a class of words, such as zhuo-zi 'table' and yi-zi 'chair', which can clearly be identified as nouns. Similarly, there is a class of words, such as tiao 'to jump', jiao 'to call out', which can clearly be identified as verbs. They can be re-
ferred to respectively as noun class and verb class. Further illustrations are given in (5) and (6) below.

(5) Noun Class:
  shu  'book'
  huar 'flower'
  pi  'skin'
  shui 'water'

(6) Verb Class:
  da  'to hit'
  gei  'to give'
  lai  'to come'
  mai  'to buy'

The problem arises in the case of words which function both as verbs and as nouns; that is, with respect to the properties given here. This class can be referred to as a 'verb/noun class'. It includes both monosyllabic and disyllabic words as illustrated in (7a) and (7b).²

(7) a. Monosyllabic Verb/Noun Words:
  suo  'to lock/lock'
  hua  'to paint/painting'
  bao  'to wrap/package'
  chui  'to hammer/hammer'
  bing  'to be sick/sickness'
  dian  'to point/point'

b. Disyllabic Verb/Noun Words:
  jianyi  'to propose/proposal'
  xiwang  'to hope/hope'
  baogao  'to report/report'
  lingdao  'to lead/leader'
  fanyi  'to translate/translation'
  mingling  'to order/order'

In section 2, I will argue that for the majority of the verb/noun words in this verb/noun class, nominal use is derived from verbal use through nominalization via zero derivation. Only a small minority in this class can

² It is obvious that there are many more disyllabic verb/noun words than monosyllabic ones. Although the list of monosyllabic verb/noun words in (7a) is not exhaustive, total membership of (7a) is undoubtedly much smaller than that of (7b).
be putatively construed as having the reverse direction of derivation; viz., from nominal use to verbal use. In any case, I propose that each lexical item in the Chinese lexicon will be marked either as a noun or as a verb, and not multiply marked.

1.2. Zero Derivation and the Overt Analogue Criterion.

In English, there are many simple lexical forms which can function as both verbs and nouns. Examples include 'walk', 'talk', 'question', 'answer', 'nail', and 'skin'. In traditional as well generative grammars, linguists have tended to treat one of the functions as more basic than the other, and then using the basic form to derive the other. This kind of morphological process, which uses zero (\(\emptyset\)) as an identity-element, has been referred to as 'conversion' or 'zero derivation' (cf. Lyons 1977:522ff).

As noted by Sanders (1988:156), "the primary basis for the recognition of zero derivation relations has been the existence of appropriate analogues involving overt morphological marking of the same derivational function". Thus, the verb, 'to answer' in English, is used to derive the noun 'answer'. This derivational process is based on the analogy of deriving nouns from verbs, as in the derivation of the noun 'proposal' from the verb 'to propose', the noun 'creation' from the verb 'to create', etc. This condition for postulating zero derivation on the basis of overt analogues is referred to by Sanders as the 'overt analogue criterion'. In English grammar, zero derivation has also been adopted to derive verbs such as 'to water' and 'to skin' from the nouns 'water' and 'skin'.

3. Sanders further argues that zero derivation cannot be justified merely on the basis of the overt analogue criterion. Being based strictly on form, the criterion needs to be supplemented by semantic and pragmatic considerations in determining the postulation of zero derivation and the direction of category shift.
4. Since they are derived from nouns, these verbs are referred to as 'denominal verbs'. While English linguists seem to have a general agreement as to the members of English denominal verbs, Sanders argues that in a number of instances,
It will be argued in section 2 that the overt analogue exists for justifying the use of zero derivation in Chinese, both for deriving nouns from verbs and for deriving verbs from nouns. Zero derivation is further adopted in section 3 for deriving causative verbs and adverbs from adjectives.

1.3. Denominal Verbs.

In English and many other languages including French, German, Spanish, and Indonesian, words naming concrete objects, such as 'nail', 'bottle', 'skin', and 'water', can also be used as verbs. These verbs, 'to nail', 'to bottle', 'to skin', and 'to water', are used to name events associated with the corresponding concrete objects. In the literature on English grammar, these verbs have been referred to as 'denominal verbs' and are derived from the corresponding nouns. This grammatical relation in English has been treated by Jespersen (1942) as a shift in morphological category from noun to verb, and by McCawley (1971) and Green (1974) as derived from a conflation of underlying universal semantic constants, such as 'to cause a nail to hold' and 'to cause something to be in the bottle'.

However, Clark and Clark (1979) have given a different analysis. They argue that denominal verbs should be treated as contextual expressions rather than denotational or indexical expressions. Particularly with respect to innovative denominal verbs, such as 'to porch the newspaper' (meaning 'to put the newspaper on the porch' (as by the newspaper carrier), they propose that such contextual expressions shifted sense and denotation according to different contexts. These are distinguished from de-

the direction of the derivation cannot be determined conclusively. Different scholars have, in fact, made mutually incompatible claims with respect to their derivational analyses. For example, Quirk and Greenbaum (1973) claim that the English noun 'cover' is derived by zero derivation from the verb 'to cover', while Clark and Clark (1979) claim that the same verb is derived by zero derivation from the noun. Similarly, whereas Clark and Clark consider the verb 'to shampoo' to be derived from the noun 'shampoo', Marchand (1969) considers that same noun to be derived from the verb.
notational expressions, such as 'man' and 'bachelor', which have fixed
sense and denotation, and from indexical expressions, such as 'he' and
'the bachelor'.

Based on Lewis' (1969) idea of language use as a convention, Clark
and Clark propose a denominal verb convention to treat innovative
denominal verbs in English. This convention, the Innovative Denominal
Verb Convention (IDVC), patterned after Grice's (1975) cooperative prin-
ciple, is stated as below:

(8) The Innovative Denominal Verb Convention (IDVC)
In using an innovative denominal verb sincerely, the speaker
means to denote
(a) the kind of situation
(b) that he has good reason to believe
(c) that on this occasion the listener can readily compute
(d) uniquely
(e) on the basis of their mutual knowledge
(f) in such a way that the parent noun denotes one role in the
situation, and the remaining surface arguments of the de-
nominal verb denote other roles in the situation.

The leading idea in Clark and Clark's theory is that, in using an innova-
tive denominal verb, the speaker intends the listener to come to a unique
interpretation of what he has said, not only from the meanings of the
words alone, but also from the context as well on the basis of what they
mutual know. Thus, as contextual expressions, innovative denominal
verbs can have, in theory, an indefinitely larger number of senses. Clark
and Clark's theory appears to account for established denominal

5. Aronoff (1980) accepts the fact of contextuality associated with denominal verbs
but argues against the necessity of introducing a denominal verb convention and
the semantic category 'contextual'. His solution is to generate denominal verbs
from their corresponding nouns by a word formation rule and to use what he has
referred to as 'sparse semantics' in conjunction with general pragmatic princi-
ples to provide a range of interpretations for denominal verbs.
verbs as well as innovative ones. It explains the phenomenon in English that an established denominal verb can often have a number of conventionalized meanings. For example, 'to water' in English can mean 'to moisten, to sprinkle, to soak with water'; in addition, it has other meanings, including 'to supply with water for drink', 'to supply water to' and 'to dilute by the addition of water'.

It should be noted that the demarcation between innovative verbs and established innovative verbs cannot always be clearly made. Once an innovative denominal verb is introduced, it may become fully established. Alternatively, it may have become established for some speakers but not for others in a speech community; or, it may even fall into disuse completely. For example, 'to parent' is still not acceptable to many speakers even though it is widely used. The denominal verb 'to money' now seems unacceptable in British English even though the Compact Oxford English dictionary lists the following meanings: 'to mint money; to supply with money; to furnish money for an undertaking'.

Based on the above discussion, for the Innovative Denominal Convention to be fully adopted in a language, I would like to propose that such a language should exhibit the following four characteristics:

(9) a. Native speakers are allowed to create denominal verbs from concrete nouns liberally.

b. The meaning of an innovative denominal verb cannot be computed by compositional rules from the denotation of its parental concrete noun.

c. Established denominal verbs can have multiple uses created through different historical and social contexts.

d. Nouns are continuously called into service as verbs, though as verbs they are acceptable to some speakers, but not acceptable to some other speakers.

It appears that modern Chinese does not utilize the Innovative Denominal Verb Convention to create denominal verbs freely and actively,
and hence generally lacks the characteristics listed in (9). Furthermore, while some instrumental verbs, such as *suo* 'to lock' and *shuan* 'to latch', might be construed as being derived from nouns, there are no putative denominal verbs in Chinese that exhibit the characteristics of (9 c). Unlike Chinese, English has a rich repertoire of established denominal verbs with multiple meanings. (For example, 'to water' has such meanings as 'to sprinkle with water', 'to supply with water', and 'to dilute with water'). The scarcity of established, as well as innovative, denominal verbs in Chinese can be attributed to the dormancy of the Innovative Denominal Verb Convention. Later I will argue that the paucity of denominal verbs in Chinese is another reflection of the iconic constraint in Chinese grammar.

---

6. Occasionally, however, one can find some instances of innovative denominal verbs in very colloquial Chinese conversations. For instance, *Bai-gan*, one kind of Chinese wine, has been used as a verb to mean 'to drink Bai-gan' (Lü 1954: 17, cited in Liu 1991:115). One anonymous reviewer also notes that Li (1987) reports a large set of disyllabic denominal verbs in Taiwan Mandarin. Examples include *baobei* 'treasure/to treat like a treasure (as something precious)', *guanliao* 'bureaucrat/to behave like a bureaucrat', *shunü* 'fair maiden/to be like a fair maiden', *a-Q* 'A-Q/to be like A-Q', *tufei* 'bandit/to be bandit-like', and *xiangtu* 'native land/to be of native-like characteristics'. These examples from Li reflect a fairly productive type of innovative denominal verbs in today's Taiwan Mandarin. In S.F. Huang's (1992) paper in which he analyzes Chinese as a metonymic language, he has also provided examples of disyllabic denominal verbs similar to those collected by Li. Huang treats these denominal verbs as a result of taking a sub-property of a thing/person and attributing it to another thing/person. However, they share in common the use of a noun as an adjective (stative intransitive verb) to describe something or someone possessing the properties characteristic of that parent noun. This kind of innovative usage is, in essence, no different from using a noun or noun phrase to describe a subject, with the absence of a copula or other main verb. Take, for instance, a sentence such as *Zhe ben shu shi kuai qian*. 'This book is/costs ten dollars.' *Shi kuai qian* 'ten dollars' is a noun phrase which serves as a predicate with no copula or some other main verb although a verb is required in English. Just as we would not claim that the noun phrase, *shi kuai qian*, has undergone conversion to a denominal verb, we would not want to consider Li and Huang's examples to be nouns that have been converted into verbs via denominal verbalization. It is also worth noting that the above examples from Li can typically be translated into English compounds that include the original noun plus the suffix ' -like'.

-445-
2. Category Shift.

2.1. Asymmetry in Category Shift Between Nouns and Verbs.

In section 1.1, I identified a class of words in Chinese which can be used both as verbs and nouns. Examples include suo 'to lock, lock' and jianyi 'to propose, proposal'. In traditional grammar, this type of relation is viewed as involving 'category shift' and is characterized by derivational morphology. Thus, in English grammar, the verb 'to lock' is treated as a denominal verb and is derived from the noun 'lock' by means of zero derivation. In contrast, the noun 'proposal' is derived from the verb 'to propose' by means of overt morphological marking. The shift from noun to verb is referred to as 'verbalization', while the shift from verb to noun is referred to as 'nominalization.'

Two interesting generalizations can be made about category shift between nouns and verbs in Chinese. First, words denoting concrete objects tend to function only as nouns. For example, diban 'floor' and pi 'skin' can only be used as nouns in Chinese. They cannot be used as verbs, in contrast to English where 'floor' and 'skin' yield the corresponding verbs, 'to floor' and 'to skin'. In Chinese, a separate verb naming the action is needed; for example, in (10) the verb bo 'to strip' is needed, and in (11) the verb pu 'to pave' is needed.

(10)  a. Ta ba she bo-le pi.
     'He skinned the snake.'
     b. *Ta pi-le she.

(11)  a. Ta ba wuzi pu-le diban.
     'He floored the room.'
     b. *ta diban-le wuzi.
Category Shifts and Word-Formation Redundancy Rules in Chinese

The second generalization pertains to words denoting actions and events. These words can, in general, function both as nouns and as verbs. For example, *ai* 'to love, love' in (12), and *jianyi* 'to suggest, suggestion' in (13):

(12) a. Muqin *ai* haizi.
   'Mothers love children.'
   b. Muqin dui haizi de *ai* shi bu bian de.
   'Mothers' love for children does not change.'

(13) a. Wo *jianyi* women xiuhui yi tian.
   'I suggest that we recess one day.'
   b. Wo fandui ni-de *jianyi*.
   'I oppose your suggestion.'

From the two generalizations above, it can be seen that an asymmetry in category shift exists between words denoting concrete objects and those denoting actions and events. This asymmetry calls for an explanation. The asymmetry in category shift cannot be attributed to syllable count, as can be seen from the examples (10) and (11), and from (12) and (13). Nor can the asymmetry be attributed to the lack of zero derivation, since overt analogues do exist in Chinese, as in the cases in (14) through (16), with suffixes -zi, -tou and -er.

(14) *Zi*-suffixation.

<table>
<thead>
<tr>
<th>VERB</th>
<th>NOUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>=========</td>
<td>=========</td>
</tr>
<tr>
<td>a. ding 'to nail'</td>
<td>dingzi 'nail'</td>
</tr>
<tr>
<td>b. shua 'to brush'</td>
<td>shuazi 'brush'</td>
</tr>
<tr>
<td>c. chui 'to hammer'</td>
<td>chuizi 'hammer'</td>
</tr>
</tbody>
</table>
(15) *Tou*-suffixation.

\[
\begin{array}{ll}
\text{VERB} & \rightarrow \text{NOUN} \\
\hline
\text{chu} & \text{'to hoe'} \\
\text{cha} & \text{'to plug'} \\
\text{zhi} & \text{'to point'} \\
\hline
\text{chutou} & \text{'hoe'} \\
\text{chatou} & \text{'plug'} \\
\text{zhitou} & \text{'finger'}
\end{array}
\]

(16) *Er*-suffixation.

\[
\begin{array}{ll}
\text{VERB} & \rightarrow \text{NOUN} \\
\hline
\text{suo} & \text{'to lock'} \\
\text{hua} & \text{'to draw'} \\
\text{bao} & \text{'to wrap'} \\
\hline
\text{suor} & \text{'lock'} \\
\text{huar} & \text{'picture'} \\
\text{baor} & \text{'package'}
\end{array}
\]

In addition to the above suffixes, the dimorphemic suffix, *-tour*, can be added to most monosyllabic verbs to form corresponding nouns indicating 'having a value of doing the action denoted by the verb'; for example, *chi* 'eat' and *kan* 'look' in the phrase, *you chi-tour*, *you kan-tour* (Chao 1968:243).

Furthermore, it would be of little explanatory value to treat the observed asymmetry in category shift as an accidental gap. To account for this asymmetry, there are basically two different approaches, namely, formal versus functional approach. In the spirit of McCawley's (1971) formal approach, for example, a denominal verb is derived from an underlying abstract predicate associated with a noun carrying a semantic role, with the noun then surfacing as a verb through conflation. Similarly, C.-T. James Huang (1992) adopts Hale and Keyser's theory of Lexical Relational Structure (LRS) to derive a denominal verb from a noun, by incorporating the noun into a non-causative upper verb, symbolized by DO. To apply these variant formal approaches to Chinese, one would have to search for a language-particular constraint to block the surface output of denominal verbs. Such a constraint would then account for the general absence of denominal verbs in this language.
Category Shifts and Word-Formation Redundancy Rules in Chinese

Since I cannot think of any independently-motivated formal constraint for the asymmetry in the category shift between nouns and verbs in Chinese, I am opting for a functional approach. In this approach, the asymmetry is attributable to a conceptual constraint; that is, it is difficult to use words denoting concrete objects as verbs, it is relatively easy to use words denoting actions and events both as verbs and nouns. A more detailed discussion of this conceptual constraint will be provided in section 4, where I will argue for the universality of this constraint.

Meanwhile, a few remarks are in order concerning the two generalizations stated above. With respect to the first generalization, there is a small group of forms that might be construed as exceptions. These forms are listed in (17) and (18). Most of the verb forms in (17) can undergo suffixation when they occur as a noun (e.g., suor 'lock', shua-zi 'brush', chu-tou 'hoe'). Thus, the overt analogue for deriving these nouns from verbs can be justified. In other cases, such as xiaobian and dabian in (17j) and (17k), they are euphemisms rather than concrete nouns to avoid specific reference to unpleasant object. And in the case of niao in (17h), the verbal form occurs only in the reduplicated form, niao-niao, in talking to young children. Therefore, in all these cases, they are not genuine exceptions. Many more instrument verbs/nouns can be added to the list in (17). Such additional cases would involve the derivation of nouns from verbs via the overt analogue, namely, suffixation with -zi, -tou, and -er.
James H-Y. Tai

(17) VERB

a. suo 'to lock'
b. shuan 'to latch'
c. bao 'to wrap'
d. hua 'to draw'
e. shua 'to brush'
f. chu 'to hoe'
g. dian 'to dot'
h. niao 'to urinate'
i. diaoke 'to sculpture'
j. xiaobian 'to urinate'
k. dabian 'to defecate'

NOUN

'lock'
'latch'
'package'
'picture'
'brush'
'hoe'
'dot'
'urine'
'sculpture'
'urine'
'feces'

With respect to the verb/noun forms in (18), they are pronounced identically except for tone:

(18) VERB

a. bà 'to hold'
b. bēi 'to carry on the back'
c. chēng 'to weigh on a scale'
d. fēn 'to divide'
e. liáng 'to measure'
f. shǔ 'to enumerate'

NOUN

'bà' 'handle'
bèi 'back'
chēng 'scale'
fēn 'share'
liáng 'quantity'
shǔ 'number'

Several more verb/noun forms can be added to this list. Observe that the nouns in (18) are in the Qusheng (Mandarin Tone 4). As proposed by Wang Li (1958:213 ff.), Downer (1959), and others, such Qusheng words are derived from non-Qusheng forms. Following a suggestion by Haudriecourt (1954), Pulleyblank (1973) further treats Qusheng as a reflex of an earlier *-s suffix, which provides an overt, segmental analogue for the derivation of the nominal form from the verbal form.

-450-
Category Shifts and Word-Formation Redundancy Rules in Chinese

The second generalization, that words denoting actions and events can function as both verbs and nouns, also merits a few remarks. Four will be given in the following paragraphs. First, verbs in Chinese can always function as subject or object, and therefore, can always be used as nouns in those positions, as in (19), corresponding to infinitival forms or gerunds in English.

(19) a. Chi zui zhongyao.
    'To eat/eating is most important.'
    b. Wo ai chi.
    'I like to eat/eating.'

Second, the nominal use of some verbs are more restricted than others. Thus, while we can say (20a), we cannot say (20b).

(20) a. Wo wang-bu-liao ta-de ai/hen.
    'I cannot forget his love/hatred.'
    'I cannot forget his hitting/kicking.'

It seems that in Chinese, words naming visible actions, such as those of hitting and kicking are more restricted to their verbal status than more abstract concepts, such as love and hate. From another vantage point, visible action verbs are prototypically more verbal than abstract stative verbs. With respect to the verbal status of a word, there also appears to be a continuum, from visible action verbs to abstract stative verbs. This is illustrated in (21), progressing from unacceptable (21a), to marginal or questionable (21b), to acceptable (21c).

    'I cannot forget his running/jumping.'
    b. ?Wo wang-bu-liao ta-de ku/xiao.
    'I cannot forget his crying/laughing.'
    c. Wo wang-bu-liao ta-de ai/hen.
    'I cannot forget his love/hatred.'
The third remark pertains to those monosyllabic abstract verbs which cannot be used as nouns, such as yao 'to invite', and qiu 'to beg'. However, when these two monosyllabic verbs combine to form a disyllabic verb, yaoqiu 'to request', the disyllabic verb, yaoqiu 'to request', the disyllabic form can be used both as a verb and as a noun. This is illustrated in the verbal usage in (22).

(22) a. Wo yao ta lai.
    'I invite him to come.'
b. Wo qiu ta lai.
    'I beg him to come.'
c. Wo yaoqiu ta lai.
    'I request him to come.'

Notice, however, that in the corresponding nominal usage in (23), only (23c) is acceptable.

(23) a. *Ta buneng jieshou zheige yao.
    'He cannot accept this invitation.'
b. *Ta buneng jieshou zheige qiu.
    'He cannot accept this plea.'
c. Ta buneng jieshou zheige yaoqiu.
    'He cannot accept this request.'

With the exception of a small group of verbs denoting more abstract activities (e.g., yao and qiu above, mai 'sell' and mai 'buy', lai 'come' and qu 'go'), the majority of verbs denoting abstract activities are disyllabic, and can be used both as a noun and as a verb (e.g., yaoqiu above, jihua 'to plan/plan', mingling 'to order/order').

The fourth and final remark concerns a group of words which can be used both as a noun and as a stative verb, as in the case of bing 'sickness/become sick' in (24), and kunnan 'difficulty/be difficult' in (25). Verbs such as bing and kunnan are stative verbs like ai 'love' and
Category Shifts and Word-Formation Redundancy Rules in Chinese

*hen* 'hate'; however, they differ from *ai* and *hen* in that they can also occur as the object of the verb *you* 'have', as illustrated in (24b) and (25b).

(24) a. Ta-de *bing* hen zhong.
    'His sickness is very serious.'

    b. Ta you *bing*.
    'He has illness.'

    c. Ta *bing* le.
    'He has become sick.'

(25) a. Ta-de *kunnan* wo hen liaojie.
    'I very much understand his difficulty.'

    b. Ta you *kunnan*.
    'He has difficulties.'

    c. Ta xianzai chuijing hen *kunnan*.
    'His current situation is very difficult (for him).'

2.2. Verbalization of Nouns.

I have shown that the great majority of the verb/noun class can be construed as having verbal roots, with their nominal forms derived from verbal forms either by zero derivation, or by suffixedation. There is, however, a small subset of the verb/noun class which can be appropriately analyzed as undergoing verbalization. In other words, they are denominal verbs. They are illustrated in (26) and (27). In (26), the exact same forms are used for both nouns and verbs. In (27), the verbal forms have undergone tonal derivation from non-Qusheng to Qusheng.
(26) NOUN VERB

a. bīng 'ice' 'to cool with ice'
b. diàn 'electricity' 'to give an electric shock to'
c. dú 'poison' 'to poison'
d. jiào 'cellar' 'to store in the cellar'
e. mián 'face' 'to face'

(27) NOUN VERB

a. gāng 'steel' gāng 'to reinforce with steel'
b. gāo 'grease, ointment' gào 'to lubricate'
c. tāng 'hot water' tàng 'to heat with water'
d. zhōng 'center' zhòng 'to hit the target'
e. wā 'tile' wā 'to tile'

2.3. Rules for Nominalization and Verbalization

The nominalization and verbalization processes in Chinese can be characterized in terms of Word-Formation Rules (à la Aronoff 1976). There are four nominalization rules in Chinese, stated in (28). A fifth rule is a verbalization rule for deriving denominal verbs via zero derivation is given in (29). ' -φ ' indicates zero derivation in the rules below.


Rule 1. \([\_\_ X] \rightarrow [\_\_ [\_\_ X] -φ] \)
Semantics: existence of the event denoted by X

Rule 2. \([\_\_ X] \rightarrow [\_\_ [\_\_ X] -φ/er] \)
Semantics: participant of action denoted by X

Rule 3. \([\_\_ X] \rightarrow [\_\_ [\_\_ X] -zi] \)
Semantics: participant of action denoted by X

Rule 4. \([\_\_ X] \rightarrow [\_\_ [\_\_ X] -tou] \)
Semantics: participant of action denoted by X
Category Shifts and Word-Formation Redundancy Rules in Chinese


Rule 5. \([a X] \rightarrow [v [v X] - \phi]\)

Semantics: to perform an activity associated with the object denoted by X

Rule 1 is the most productive of the nominalization rules. However, it only applies to stative verbs and not to activity verbs (except in subject or object position). In terms of lexical rules, there are two ways to characterize this difference. One is to mark stative verbs, such as jianyi, yao, qiu, ai, and hen with \([+R1]\) to undergo Rule 1, and activity verbs, such as da and ti, with \([-R1]\), to prevent these verbs from undergoing Rule 1. The other way to characterize the difference is by a lexical redundancy rule, which can be stated to the effect that stative verbs imply \([+R1]\). In this manner, we would not need to mark the activity verbs with \([-R1]\).

The second approach, which I opt for, has two advantages: one, it recognizes Rule 1 as a productive rule, and two, it leaves unmarked activity verbs, which constitute the bulk of the inventory of the verb class.

Rules 2 through 4 are less productive rules; hence, verbs that undergo these rules will be marked to do so in the lexicon. Thus, the verb suo 'to lock', for example, will be marked with \([+R2]\) so that it can either take a zero suffix, or the -er suffix. In the case of shua 'to brush', the verb will be marked with \([+R3]\) to derive the noun, shuazi 'brush'. And in the case of chu 'to hoe', the verb will be marked with \([R4]\) to generate the noun, chutou 'hoe'.

Rule 5 is very limited in productivity. Therefore, nouns that undergo this rule, such as those in (26) and (27), must be marked in the lexicon to undergo it.

In this section, I have focused on the shift between verbs and nouns, the most important category shift in Chinese grammar. In the following

---

7. Every verb in Chinese can assume nominal status in that they may be placed in subject or object position without overt morphological marking. This is more the case of a systematic, grammatical process than a morphological process, the latter requiring lexical marking, overt or otherwise.
section, some minor types of category shifts will be examined briefly and formalized via Word-Formation Rules.

3. Other Types of Category Shifts.

There are other types of category shifts in Chinese. Three of these will be treated here. One type is verbalization via hua-suffixation, another is causative verb formation via zero derivation, and a third type is adverb formation. These will be discussed briefly in turn below.

3.1. Verbalization Via Hua-Suffixation.

In section 2, the observation is made that verbalization is quite limited in Chinese. This observation needs to be qualified by the hua-suffixation, which comes from Western influence. This verbalization via hua-suffixation is a very productive process in modern Chinese (cf. Zhou 1991). Examples are given below, with (30) involving nouns, (31) adjectives, and (32) adverbs.

(30) Hua-Suffixation: Noun-to-Verb Shift.

\[
\text{NOUN} \quad \rightarrow \quad \text{VERB}
\]

\[
\begin{align*}
\text{a. shen} & \quad \text{'deity'} & \quad \text{shenhua} & \quad \text{'to deify'} \\
\text{b. nu} & \quad \text{'slave'} & \quad \text{nuhua} & \quad \text{'to enslave'} \\
\text{c. jixie} & \quad \text{'machinery'} & \quad \text{jixiehua} & \quad \text{'to mechanize'} \\
\text{d. Meigu} & \quad \text{'America'} & \quad \text{Meiguo} & \quad \text{hua} \quad \text{'to Americanize'}
\end{align*}
\]

(31) Hua-Suffixation: Adjective-to-Verb Shift.

\[
\text{ADJECTIVE} \quad \rightarrow \quad \text{VERB}
\]

\[
\begin{align*}
\text{a. lao} & \quad \text{'old'} & \quad \text{laohua} & \quad \text{'to age'} \\
\text{b. nianqing} & \quad \text{'young'} & \quad \text{nianqinghua} & \quad \text{'to rejuvenate'} \\
\text{c. zidong} & \quad \text{'automatic'} & \quad \text{zidonghua} & \quad \text{'to automate'}
\end{align*}
\]
(32) Hua-Suffixation: Adverb-to-Verb Shift.
ADVERB \rightarrow VERB

\begin{align*}
\text{a. jingchang} & \quad \text{‘normally’} \\
\text{b. juedui} & \quad \text{‘absolutely’}
\end{align*}

\begin{align*}
\text{jingchanghua} & \quad \text{‘to normalize’} \\
\text{jueduihua} & \quad \text{‘to make absolute’}
\end{align*}

The three cases of hua-suffixation can be accounted for via the following three verbalization rules, Rules 6 through 8, respectively, given in (33). Of these rules, Rule 6, which converts nouns to verbs, is the most productive. Less productive is Rule 7, which converts adjectives into verbs, and the least productive is Rule 8, converting adverbs into verbs.

(33) Word-Formation Rules in Chinese: Verbalization via hua-suffixation

Rule 6. \( [\text{n} \ X] \rightarrow [\text{v} \ [\text{n} \ X] \ -\text{hua}] \)

Semantics: to cause a happening of the situation denoted by X

Rule 7. \( [\text{adj} \ X] \rightarrow [\text{v} \ [\text{adj} \ X] \ -\text{hua}] \)

Semantics: to cause a happening of the state denoted by X

Rule 8. \( [\text{adv} \ X] \rightarrow [\text{v} \ [\text{adv} \ X] \ -\text{hua}] \)

Semantics: to cause a happening of the manner denoted by X

3.2. Causative Verb Formation Via Zero Derivation.

There are many adjectives (i.e., intransitive stative verbs) which can be used as transitive causative verbs without overt morphological marking. Some examples are given in (34).

(34) \begin{align*}
\text{ADJECTIVE} & \quad \rightarrow \quad \text{CAUSATIVE VERB} \\
\text{a. lei} & \quad \text{‘tired’} \\
\text{b. anding} & \quad \text{‘peaceful’} \\
\text{c. chunjie} & \quad \text{‘pure’}
\end{align*}

\begin{align*}
\text{‘to make (s.o.) tired’} \\
\text{‘to make peaceful’} \\
\text{‘to purify’}
\end{align*}
The rule to account for this causative verb formation is Rule 9, given below:

Rule 9. \([\text{adj } X] \rightarrow [\nu \text{ [adj } X] - \phi]\)
Semantics: to cause a happening of the state denoted by \(X\)

3.3. Adverb Formation.
Adverbs can be formed from adjectives either by means of zero derivation or by reduplication. The former is illustrated in (36), and the latter in (37), with optional ' -de' suffix added.

(36) \(\text{ADJECTIVE} \rightarrow \text{ADVERB}\)

\[
\begin{array}{ccc}
\text{a. zhen} & \text{'real'} & \text{''really''} \\
\text{b. kuai} & \text{'quick'} & \text{''quickly''} \\
\text{c. tebie} & \text{'special'} & \text{''especially''}
\end{array}
\]

(37) \(\text{ADJECTIVE} \rightarrow \text{ADVERB}\)

\[
\begin{array}{ccc}
\text{a. man} & \text{'slow'} & \text{''slowly''} \\
\text{b. yuan} & \text{'far'} & \text{''from afar''} \\
\text{c. qingchu 'clear'} & \text{qingqingchuchu(-de) 'clearly' } \\
\text{d. qinre 'warm'} & \text{qinqinqure(-de) 'warmly' } \\
\end{array}
\]

The rules to account for the above examples are given in (38), with Rule 10 to account for (36), and Rule 11 for (37). In (36), 'X' represents a lexical item as in the previous rules. For Rule 11, 'A' and 'B' represent different syllables. A monosyllabic word 'A' is reduplicated as 'AA', and a disyllabic word, 'AB' is reduplicated as 'AABB'.
Category Shifts and Word-Formation Redundancy Rules in Chinese


Rule 10. \([\text{adj } X] \rightarrow [\text{adv } [\text{adj } X] - \phi]\)
Semantics: in a manner of the state denoted by X

Rule 11. \([\text{adj } A(B)] \rightarrow [\text{adv } [\text{adj } AA(BB)] (-de)]\)
Semantics: in a manner of the state denoted by A(B)

The rules given in (38) account for two of the most productive adverb formation processes in Chinese. There are many other adverb formation rules which involve much more complicated morphological processes and cannot be captured by Rule 11. Example include deriving such forms as lengqingqing 'lonely' from lengqing 'isolated' and hulihutu 'muddle-headedly' from hutu 'muddled-headed'. Since the main concern of this paper is the shift in grammatical category, with or without overt morphological marking, other morphological processes involving adverb formation will not be addressed here.


In sections 2 and 3, I noted that, with the exception of the Europeanized hua-suffixation, nominalization is much more productive than verbalization in Chinese, thereby creating an asymmetry in the language. This asymmetry is not restricted to Chinese, however, but can be found in other languages as well. Nevertheless, Chinese differs from many other languages in exhibiting a much more obvious asymmetry. This conspicuous asymmetry in Chinese needs to be explained. To address this issue, I will turn to Hopper and Thompson (1984) as a point of departure.

In their study on lexical categories in universal grammar, Hopper and Thompson (1984) propose that in every language there are nominal roots whose semantic contents make them more likely to function as nouns than as verbs in discourse; correspondingly, there are verbal roots whose semantic contents make them more likely to function as verbs
than as nouns in discourse. Their proposal is supported by my observation in Chinese: with respect to semantically-based roots, words denoting concrete objects tend to function only as nouns, while words denoting actions tend to function only as verbs. Using English as the primary source of data, Hopper and Thompson (1984:745) also make two generalizations regarding category shifts between nouns and verbs. These generalizations, which they intend as implicational universals, are restated more simply below as (39a) and (39b).

(39) a. Languages tend to have special nominalizing morphology, but no special verbalizing morphology.

b. A nominalization interprets an event as an entity but there is no corresponding verbalization which interprets an object as an event.

Generalization (39a) establishes an asymmetry between nominalized forms and verbalized forms, while generalization (39b) establishes a semantic asymmetry between nouns and verbs. Hopper and Thompson's attempt is to explain the morphological asymmetry in (39a) in terms of the semantic asymmetry in (39b). Hopper and Thompson use English to illustrate these two generalizations. Some examples of (39a) are given in (40).

(40) Illustration of (39a):

<table>
<thead>
<tr>
<th>NOMINALIZATION:</th>
<th>VERB</th>
<th>NOUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>propose</td>
<td>proposal</td>
<td></td>
</tr>
<tr>
<td>create</td>
<td>creation</td>
<td></td>
</tr>
<tr>
<td>sell</td>
<td>selling</td>
<td></td>
</tr>
<tr>
<td>excite</td>
<td>excitement</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VERBALIZATION</th>
<th>NOUN</th>
<th>VERB</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>to water</td>
<td></td>
</tr>
<tr>
<td>skin</td>
<td>to skin</td>
<td></td>
</tr>
<tr>
<td>bottle</td>
<td>to bottle</td>
<td></td>
</tr>
<tr>
<td>hospital</td>
<td>to hospitalize</td>
<td></td>
</tr>
</tbody>
</table>

From (40), we can see that in English, nominalization involves rather
elaborate morphology, but verbalization primarily involves zero derivation. As far as semantic shift is concerned, nominalization takes an event as an entity for reference purposes in discourse. The converse, however, does not occur. Verbalization does not make an object an event; it simply uses an object to report an event associated with that object in a discourse context. 'To water', for example, can associate a number of different events involving the use of water on something, whether by pouring, sprinkling, or some other action.

In essence, Hopper and Thompson propose that the morphological asymmetry is motivated by a functional asymmetry between nouns and verbs in discourse. They further suggest that this functional asymmetry is based on a cognitive asymmetry; namely, that it is easier for human cognition to treat an abstract event as an entity than to treat a concrete object as an abstract event. Hopper and Thompson conclude that, conceptually as well as morphologically, languages have nominalization processes, but no analogous verbalization processes.

While Hopper and Thompson's generalization on conceptual asymmetry (39b) is supported by empirical evidence from Chinese and other languages, the same is not true for their morphological asymmetry given in generalization (39a). Counter to their observations based on English, we have seen that in Chinese, while the most productive rule of nominalization (Rule 1) is accomplished through zero derivation, that of verbalization is via hua-suffixation. Other languages also do not support their observations. This can be seen in the examples of verbalization from French, Spanish, German, Turkish, and Indonesian in (41), languages which possess rich morphology in verbalization.

8. In the spirit of Lakoff and Johnson's (1980) ontological metaphor, to treat an abstract event as an entity is an easier ontological commitment than to treat a concrete object as an abstract event.
The above examples from unrelated languages also provide ample evidence to refute Hopper and Thompson's (1984:745) claim of an implicational universal concerning category shift:

(42) "If a language has category-deriving morphology at all, what we find is that it is noun-deriving, but not verb-deriving processes."

Hopper and Thompson's implicational universal can be further refuted by a language such as Japanese, which has very rich inflectional morphology and yet appears to lack genuine denominal verbs, as illustrated by two Japanese examples in (43).

(43) a. mizu 'water'  
   *mizu-ru/*mizu-iru/*mizu-eru  
   but: mizu o yaru 'to give water'  
   mizu o maku 'to scatter water'  

b. kugi 'nail'  
   *kugi-ru  
   but: kugi o utsu 'to hit nail'
Category Shifts and Word-Formation Redundancy Rules in Chinese

To use nouns as verbs, Japanese employs the suru-construction, a mechanism like the hua-suffixation in Chinese, as shown in (44):

(44) a. denwa  'telephone'
denwa o suru  'to telephone'
b. kagi  'lock'
kagi o suru  'to lock'

The sets of examples from various languages given above, including English and Chinese, show that there is no correlation between rich morphology in a language and an abundance of denominal verbs. Thus, even from the point of universal typology, there is no reason to associate the scarcity of denominal verbs in Chinese with a paucity of derivational morphology.

5. Conclusion.

In this paper, I have examined in detail category shift between nouns and verbs in Chinese. Several minor types of category shift have also been examined. These shifts have been characterized in terms of a set of Word-formation Rules. I have shown the paucity of denominal verbs in Chinese. The only exception, as noted earlier, is hua-suffixation, a Western inspired morphological process that is patterned after the -ize suffix in English. I have also argued that the general lack of verbalization in the native Chinese lexicon is not explainable as being due to a lack of morphology, either from internal evidence in Chinese or from cross-linguistic data.

A more plausible answer may lie in the cognitive asymmetry between nominalization and verbalization. While there is an ontological metaphorization to treat an event as an entity, there is no analogous metaphorization to treat an object as an event or action. This conceptual asymmetry in universal grammar is already observed by Hopper and Thompson. In the case of Chinese, Tai (1985, 1993) has shown that the language
is rich in iconic motivations. On that basis, it is not surprising to find conceptual asymmetry more clearly reflected in Chinese than in other languages, including English. The general absence of denominal verbs in Chinese provides yet another instance of iconicity in Chinese grammar, alongside temporal sequence and other iconic motivations.

It is important to note that Classical Chinese has an abundance of denominal verbs (cf. Liu 1991), contrasting with the paucity of denominal verbs in modern Chinese dialects, including Mandarin, Amoy, and Cantonese. This contrast presents an enigmatic problem as to why, unlike Classical Chinese and modern English, the modern Chinese dialects reflect a rather strong and obvious conceptual asymmetry between nominalization and verbalization. Chan and Tai (1994) observe that the reduction of denominal verbs in the modern Chinese dialects is, in part, due to the loss of the mechanism for deriving verbs from nouns, namely, via derivation by tone change (to Qusheng). At the same time, they also observe the instrumental verbs constitute the most frequently-occurring type of denominal verbs in Classical Chinese as well as in the modern dialects. Interestingly, this distribution pattern also obtains in modern English (cf. Clark and Clark 1979:776). Thus, even in Classical Chinese, verbalization via tone change is not equally productive across all noun categories. I do not have an answer for this skewed distribution. Nonetheless, it is clear that verbalization in Classical Chinese is still subject to the conceptual constraint, although seemingly to a lesser extent than modern Chinese dialects.

A final question regarding the proposed conceptual constraint needs to be raised here. Concrete spatial terms can be easily extended to express abstract time in natural languages (cf. Lyons 1977:690ff, Tai 1989:212ff). Why, then, does one not find a parallel extension from concrete nouns to abstract actions in Chinese and other languages which have a limited repertoire of denominal verbs? One plausible answer can be offered

---

9. Chan and Tai (1994) provides a detailed account of the differences between modern Chinese dialects with respect to denominal verbalization.
Category Shifts and Word-Formation Redundancy Rules in Chinese

here. Some preliminary observations need to be made before I attempt to answer the question. While actions in human activities are not as tangible as concrete objects, they can be visualized in our mental representation (e.g., jumping, kicking, hitting, crying, etc.). There is no reason to require that these activities be derived from concrete objects. Furthermore, from the functional point of view, for the sake of clarity, a body part such as the hand, can be used for innumerable actions (holding, hitting, cutting, grabbing, etc.). Indeed, one of the reasons for the rich inventory of instrumental verbs is that an instrument is designed for some specific purpose and, hence, there is a more clear-cut, unambiguous, one-to-one relationship between the instrument and the action associated with it (e.g., using a hammer to hammer (a nail)). In contrast, it is far less practical for communication purposes to use concrete nouns such as 'hand' and 'foot' to represent a myriad of activities associated with them. Therefore, in human conceptual structure, concrete objects and activities co-exist and only interat under certain situations, namely, when the context provides clear meaning for interpretation.

The extension of concrete spatial terms to temporal expressions is very different from the denominal verb convention discussed in this paper. Unlike activities such as crying, kicking, jumping, and so forth, which we can see with our eyes, we cannot see time, or time passing, in a similar fashion. As a result, human languages structure time -- the relating of different points in time and the passing of time itself -- in terms of spatial relations so that we can 'virtually visualize' temporal relations and time passing. Static temporal relations are structured in terms of static spatial relations, while time passing is structured in terms of change of location.

The contrast between the extension of spatial terms for temporal reference and that of concrete nouns for activities calls for the need for further research into the intricate relationship between human cognition and grammatical structures.
References

Jespersen, Otto. 1942. A Modern English Grammar on Historical Princi-
Category Shifts and Word-Formation Redundancy Rules in Chinese


