LINGUISTICS IN CHINA

No 1

Edited by Feng Shi and Hongming Zhang

主编 ◎ 石 锋 张洪明

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语言学文选

（第一辑）

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Foreword

Jiaxuan Shen

I received good news that World Publishing Corporation is putting forward two linguistics series—*Overseas Linguistics* and *Linguistics in China*. The former plans to introduce important linguistic researches overseas to China by translating them into Chinese, and the latter aims at disseminating Chinese linguistic researches to the rest of the world by converting them into English. The editors, Professors Feng Shi and Hongming Zhang, asked me to compose a foreword for these two series, providing me the freedom of deciding whether to write a foreword for each or one for both. Here I respectfully ask permission to choose the second option. I have two reasons for doing so: Firstly, the two endeavors—introducing top researches from abroad to China and from China to the English-reading world—complement each other, both of which are indispensable to the promotion of linguistic studies globally. Secondly, writing only one foreword will spare the trouble of being repetitions.

Academic development always comes as a result of unceasing correlations, communication, and mingling among different academic traditions. Bernhard Karlgren's work serves as an admirable example. Because of his significant achievement in traditional Chinese phonology, any omission of his name from the history of Chinese linguistics, or more specifically, the history of Chinese phonological studies, is unimaginable. Karlgren's achievements, however, benefited greatly from previous research in Chinese philology. In his own words, he described himself as extremely lucky to have had rhyming dictionaries and rhyme tables reflecting the *qieyun* system when studying Middle Chinese, and to have had the *Shijing* (*The Book of Odes*) and *xiesheng*[1] systems available to him when working with Old Chinese. At the time, the knowledge of Chinese researchers[2] had already reached a high level of sophistication in these two fields of study. It was this knowledge upon which Karlgren's theories were built.

Linguistic studies abroad, especially in the western world, have developed fast and changed greatly in the past few decades. New theories, novel methods, and groundbreaking results have been emerging and flourishing. Despite this, we Chinese linguists have lagged behind our close neighbor—Japan—in the translation and introduction of western linguistic works. Besides incorporating the

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[1] *Xiesheng* refers to the phenomenon that those Chinese characters sharing the same sound radical have similar pronunciations.

[2] That is, researchers of the Qing Dynasty.

strengths of our traditional studies, we must acquire sufficient knowledge of foreign theories, based on which we will make our own innovations, in order to take our linguistic studies to a higher level. What we need for this course of action is a progressive perspective, a scientific conception, and an open, balanced mindset. On the whole, I believe, our most crucial task for many years to come is bringing in excellent foreign research. But the job of pinpointing quality research calls for our efforts in careful selection, possessing good insight, and cooperating with colleagues at home and abroad. It is my sincere desire that *Overseas Linguistics* will rise to the occasion.

We are eager to know the world. And we must make ourselves known to the world as well. By beginning to study linguistics far back in history, we have created our own academic conventions. Characteristics of genesis, typology, and geography among languages spoken in China and her neighboring regions differ from those found in Indo-European languages. Most (though not all) western linguists have either very limited or superficial understanding of these characteristics. They know even less about the perspectives, methods, and achievements of Chinese scholars. Lately, I've been reading about western linguistic typologists' discussions on whether or not the lexical classification into nouns, verbs, and adjectives is universal across languages, and if any difference of classification methods should such universality exists. It appears that those comments made by western linguists on Chinese typology are typically fleeting, over-generalized, or mistaken in the context of their own frameworks of lexical classification. As far as I know, the western linguistic typologists are yearning for an objective description of the Chinese language and the viewpoints and perspectives taken by Chinese scholars, which are currently inaccessible to them due to the lack of common working language. The publication of *Linguistics in China* is groundbreaking in this sense. The series is monumental because it introduces in English some contemporary researches of Chinese linguists. All roads are difficult to travel before they are evened out. But we know that little by little we shall travel far. The first step always deserves encouragement. In the meantime, the editors of these series should keep an eye on responses from foreign peers and use these responses of the highest quality.

The ultimate goal of linguistic study is to explore the nature of human language. Universal factors of language hide behind peculiarities of specific tongues, while the same unique features are embodiments of the universals. We Chinese linguists should strive to make our own contributions in the course of that exploration. As complements to each other, these two collection series are stepping stones in the journey toward our goal.

It is translated by Junjie He and edited by Chenqing Song.

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PHONOLOGY

Stress, Information, and Language Typology

San Duanmu

Abstract: Stress theory covers word stress and phrasal stress. The former can differ from language to language. Whether the latter can also differ from language to language is still an open question. This article reviews several theories of phrasal stress and points out their shortcomings. Then a new theory is proposed, which is called the 'Information-Stress Principle', according to which phrasal stress is determined by information load: words with more information should be stressed and words with less information need not. The information load of a word can be determined by the speaker and his/her environment; it can also be determined by information theory, syntactic structure, and the context. The new theory is simpler that previous ones, without their shortcomings, and offers a simpler view of language typology.

Key words: Information-Stress Principle, stress, information theory, information load, language parameters, language typology

1 Introduction

Every language has stress. In some languages, stress can distinguish word meanings, as shown in (1). In some languages, stress is not used to distinguish word meanings, but it still occurs, such as in contrastive stress, exemplified in (2). For clarity I use underline to indicate stressed syllables.

> (1) Stress used to distinguish word meanings (in English)
> Noun: <u>con</u>tent
> Verb: con<u>tent</u>
> (2) Contrastive stress (Chinese)
> *Wo bu xing <u>Wang</u>, wo xing <u>Huang</u>.*
> I not named Wang I named Huang
> "My name is not <u>Wang</u>, but <u>Huang</u>."

A stressed syllable is usually longer, with a full rime (no reduction), and often a certain pitch contour (Fry 1955, 1958), or wider pitch range (Shen 1985; Liu and Xu 2005). However, in tone languages (such as Chinese and Japanese), since pitch is used to contrast word meanings, native judgment for stress is often unclear.

Most stress theories often focus on word stress (e.g. Wang and Feng 2006). Less discussion is

given to stress above the word level. In this study I focus on the latter, which I shall refer to as phrasal stress, which covers both compound stress and phrasal stress.

2   Theories of phrasal stress

In this section I review main theories of phrasal stress in the past 40 years.

2.1   Chomsky and Halle (1968): Two phrasal stress rules

Chomsky and Halle (1968) discuss English and propose two rules, which are the Compound Stress Rule and the Nuclear Stress Rule, re-phrased in (3) and (4), where A and B are the immediate constituents of a compound or phrase, and underline indicates words that receive stress from the rules.

> (3) Compound Stress Rule:
> In a compound [A B], if B is a compound, then B gets stress, otherwise A gets stressed. Examples:
> > [A B]   black-board
> > [A [B C]]   stone black-board
> > [[A B] C]   black-board store
>
> (4) Nuclear Stress Rule:
> In [A B], B gets stress.
> Examples:
> > [A B]   many people
> > [A [B C]]   many old people
> > [[A B] C]   many people arrived

Chomsky and Halle (1968) did not discuss stress in other languages, nor did they explain why compounds and phrases have different stress rules. For them, therefore, it is possible that in some languages compounds and phrases both have left-headed stress (i.e. stress on the left), or both have right-headed stress (i.e. stress on the right), or compounds have right-headed stress and phrases have left-headed stress.

2.2   Halle and Vergnaud (1987): Stress parameters

Chomsky (1981) proposes that differences among languages can be attributed to different settings of a few parameters. Following this idea, Halle and Vergnaud (1987) propose that stress differences in different languages can be attributed to a set of stress parameters. Two such parameters are shown in (5).

> (5) Stress parameters (Halle and Vergnaud, 1987):

[+/ – bounded]   whether the length of a foot is limited
[left/right]   whether stress in a foot is on the left or on the right

For example, we can translate the rule in (4) as the parameter settings in (6).

(6) Nuclear Stress Rule:
    [– bounded, right]   unlimited foot length, stress on the right

It can be seen that the parameter settings of Halle and Vergnaud (1987) do not depend on syntax. For example, when choosing stress parameters for compounds, some languages can choose left-headed stress, and some can choose right-headed stress. Therefore, in principle some languages can have stress patterns that are opposite to those in English: compounds are right-headed (instead of left-headed), and phrases are left-headed (instead of right-headed). However, the focus of Halle and Vergnaud (1987) is still word stress. Although they assume that phrasal stress can differ in different languages, no examples are given.

2.3   Duanmu (1990): Non-head Stress

Duanmu (1990) propose that the two phrasal stress rules of Chomsky and Halle (1968) can be combined into one, shown in (7), where underline indicates a constituent that receives stress.

(7) Non-head Stress:
    In a syntactic structure [A B], one is the head and the other the non-head. Phrasal stress is assigned to the non-head.
    Examples: [X <u>YP</u>]
              [<u>YP</u> X]
              [<u>ZP</u> [X <u>YP</u>]]

In most cases, the Non-head Stress rule gives similar results as the two rules of Chomsky and Halle (1968), as the examples in (8) show.

(8) Illustration of the Non-head Stress rule
    Compounds:
    [<u>A</u> B]   <u>black</u>-board
    [<u>A</u> [<u>B</u> C]]   stone <u>black</u>-board   (not [A [<u>B</u> C]])
    [[<u>A</u> B] C]   <u>black</u>-board store
    Phrases:
    [P <u>NP</u>]   in <u>school</u>
    [V <u>NP</u>]   watch <u>movies</u>
    [<u>AP</u> (F) <u>NP</u>]   <u>pretty</u> (F) <u>woman</u>   (not [AP <u>N</u>])

For compounds, there is a slight difference for the structure [A [B C]], where the result of Duanmu

seems to agree with native intuition better. In phrases, the structure [AP (F) NP] follows the analysis of current syntactic theory (e.g. Pollock 1989; Ritter 1991; Cinque 1993), where the syntactic head is not the noun, as traditionally assumed, but a functional element F (similar to the *de* in Chinese). Additional discussion of the role of Non-head Stress in Chinese can be found in Duanmu (1999).

2.4 Cinque (1993): **Cumulative stress**

Cinque (1993) proposes that phrasal stress us directly related to the depth of syntactic structure. Stress starts from the deepest syntactic units (the innermost brackets) and accumulates along the way. An example is shown in (9), where stress is assigned in three cyclic steps, starting from the innermost word, and the taller the column of * marks, the more stress a word has.

(9) Cumulative stress

Cycle 1	Cycle 2	Cycle 3
		*
	*	(. *)
*	(. *)	(. (. *))
(*)	(. (*))	(. (. (*)))
[* [* [*]]]	[* [* [*]]]	[* [* [*]]]

The proposal of Cinque (1993) is very similar to the Non-head Stress rule of Duanmu (1990), because in a syntactic structure, the syntactic non-head always has a deeper structure than the syntactic head. This can be seen in (10).

(10)

X   YP   YP   X
    ...   ...
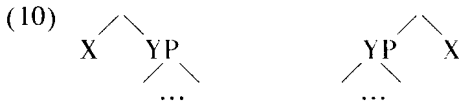
The syntactic non-head has a deeper structure because it is phrasal in nature and can expand. In contrast, the syntactic head is a word (or a morpheme), which cannot expand.

2.5 Ladd (1996): **Phrasal stress can differ in different languages**

According to Duanmu (1990) and Cinque (1993), phrasal stress can be derived from syntax, and it works the same way for all languages. Ladd (1996: 174) offers a different view. He believes that 'accentuation ... is a matter of the grammar of specific languages rather than of universal principles'. Ladd does not discuss in which ways phrasal stress can differ from language to language, but offers some hypothetical examples, shown in (11).

(11) Hypothetical examples of variation in phrasal stress (uppercase indicates stress)

Language A	Language B
This is book RED	This is BOOK red
I bought car NEW	I bought CAR new
He has nose BIG	He has NOSE big

The purpose of (11) is to show that even if two languages have exactly the same syntax (in terms of word order), they can still differ in phrasal stress. Ladd also offers some other examples, to be discussed later.

2.6 Zubizarreta and Vergnaud (2000): Focus stress

Like Duanmu (1990) and Cinque (1993), Zubizarreta and Vergnaud (2000) believe that phrasal stress can be derived from syntax. However, unlike previous people, who treat normal stress and focus separately, Zubizarreta and Vergnaud (2000) propose that normal stress and focus can be treated in the same way.

Zubizarreta and Vergnaud (2000) adopts Chomsky's (1971) definition of focus, which refers to 'new information' . It can be shown by answers to question sentences. A focus can be large or small, ranging from one word, as in (12a), to an entire sentence, as in (12b).

(12) Focus (new information, indicated by underline)
    a. Question: Who watched a movie?
       Answer: John watched a movie.
    b. Question: What's the news today?
       Answer: John bought a book.

In (12a), the focus of the answer is *John*. In (12b), the focus of the answer is the entire sentence. The two answers have the same syntax, but the main stress falls on different words: it is on *John* in (12a) and *book* in (12b).

When the focus is the entire sentence, the stress rule of Zubizarreta and Vergnaud (2000) is given in (13), which is similar to those of Duanmu (1990) and Cinque (1993).

(13) Assign main prominence to the first selectional dependent.
    Example: [XP X], [X XP], [XP [XP X]]

    Or: Assign main prominence to the category that is lowest in the asymmetric c-command ordering.
    Example: [XP X], [X XP]

The 'selected dependent' and 'c-commanded category' are similar to the syntactic non-head of Duanmu (1990), and the 'lowest category' is similar to the deepest constituent of Cinque (1993). In the answer of (12b), *book* is the lowest category, which is also the location of main stress. Therefore,

the prediction of stress assignment is correct.

When the focus is smaller than the entire sentence, how is stress assigned? Zubizarreta and Vergnaud (2000) propose a de-accent rule, rephrased in (14).

(14) The de-accent rule:

Anaphoric material is de-accented.

In (12a), *watched a movie* is the anaphoric material, which is de-accented. In the tree representation in (15), the de-accented part is shown in parentheses.

(15) Representation of de-accenting

```
              S
           /    \
        NP      (VP)
        Δ        Δ
       John   (watched a movie)
```
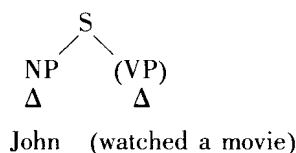
The original stress inside the parentheses will be ignored. As a result, only *John* is visible, and therefore it carries main stress.

3   Problems with current theories

There are some common problems in the theories just reviewed. First, why should some constituents (such as the syntactic non-head) have more stress than others? No answer is offered. Second, why should there be more stress on the focus? There is no explicit answer either. Third, it has been noted that frequent words often have less stress than infrequent words. For example, Fidelholtz (1975) offers the examples in (16), where the sounds of interest are underlined.

(16) Frequent: inf<u>o</u>rmation [ɚ]   <u>a</u>stronomy [ə]

Infrequent: imp<u>o</u>rtation [oɚ]   g<u>a</u>stronomy [æ]

The word pair *information* and *importation* are similar in structure, yet there is stress reduction in the former but not in the latter. Similarly, *astronomy* and *gastronomy* are also similar in structure, yet there is stress reduction in the former but not in the latter. Why should frequent word have less stress than infrequent ones? There is no explicit explanation in stress theories either.

4   The Information-Stress Principle

I propose a new theory of phrasal stress, which I call the Information-Stress Principle. It offers a uniformed explanation of the problems just mentioned. Let us consider contrastive stress first, exemplified in (17), where underline indicates words under contrast.