TR-IT-0307

The Part-of-speech and Parsing Rules
for the Chinese Language

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1999 年 8 月

Abstract

For the purpose of Chinese generation in TDMT system and future work regarding the Chinese language processing, the report proposes the classification of the part-of-speech of Chinese words and describes the main parsing rules for the Chinese language processing in detail.

Contents

1 Introduction

The part-of-speech and parsing rules are important foundation for the natural language processing systems based on the analysis and reasoning method. For the purpose of the Chinese language processing, the report presents the result of classification of part-of-speech of Chinese words and describes the main parsing rules of Chinese in detail.

In the report, Section 2 proposes the division of part-of-speech of Chinese words and describes each part-of-speech in detail. The reasons why the authors classify it in the report are explained, and some examples are also given in this section. Section 3 describes 238 parsing rules, and each rule follows some examples. The explanatory notes to both part-of-speech and parsing rules are also given respectively in Section 2, in Section 3 as well.

However, perhaps the viewpoints presented in the report are not perfect, but the authors believe that it is a profitable discussion and analysis.

2 Division and Description of Part-of-speech of Chinese Words

2.1 Motivations

I can not say that the Chinese language is the most complicated language in the world, but too many undetermined grammar rules or regulations and so many ambiguities often make computational linguists and experts on natural language processing have headache. The part-of-speech of Chinese words is not an exception either. Almost all books or papers in regarding to the part-of-speech of Chinese words have their own opinions, and almost all the Chinese language processing systems use their own definitions and symbols. I don't want to join the debate on how to divide and describe the part-of-speech of Chinese words. I just give the divided results from the viewpoints of natural language processing according to my own experience and understanding on the Chinese language processing.

In the report, the part-of-speech of Chinese words is classified based on the following two points:

1. The grammatical functions of Chinese words;
   The grammatical functions of Chinese words are always considered as the main or even only basis to divide the part-of-speech of Chinese words by linguists and computational linguists. The grammatical functions mainly refer to what purposes a word serves in the sentence and the combination ability of a word.

2. The requirements of natural language processing system.

   As a natural language processing system, it has two basic requirements to the part-of-speech at least: (1)The ambiguity of standards to judge the part-of-speech of a word should be as little as possible; and (2)The part-of-speech should be easily used to describe the parsing rules as correct as possible.

However, the results of classification and explanation in the following maybe are not very reasonable and practical somewhere. I would like to open up the floor for questions and comments. I believe that any suggestions and interrogations are beneficial both to the Chinese language processing and to me.

2.2 Division and Expression of Part-of-speech of Chinese Words

In the report, the part-of-speech of Chinese words is classified into 18 categories. They are described in detail as follows.

2.2.1 名词 (Noun, N)

In the Chinese language, the noun is of two main characteristics: (1)The noun can be modified by numeral and classifier; and (2)The noun can't be modified by adverb. In our classification system, the noun includes the following 2 sub-classes:

1. 专有名词 (Special Nouns, Nspe)

   (a) 指人专有名词 (Special nouns used for expressing person names, NHuman):
      i. 姓氏 (Family Names)
         e.g., 张 (zhang1), 王 (wang2), 李 (li3), 刘 (liu2), 孙 (sun1) etc.;
      ii. 人名 (Given Names)
         e.g., 武松 (wu3 song1), 铃木和夫 (suzukikazuo) etc.

   (b) 指物专有名词 (Special nouns used for expressing things, NThing):
      i. 机构或组织名 (The names of special organizations or mechanisms)
         e.g., 国务院 (guo2 wu4 yuan4, the State Council), 议会 (yi4 hui4, Parliament).
      ii. 地方名 (The names of places)
         e.g., 东京 (dong1 jing1, Tokyo), 长江 (chang2 jiang1, Yangtze River) etc.;
      iii. 商标名称或拟人名称 (The names of trade marks or personification names)
         e.g., 索尼 (Sony), 上帝 (God) etc.

2. 普通名词 (Common Nouns, Ncom)
   This type of nouns includes all countable nouns and uncountable nouns except special nouns mentioned above. e.g., 汽车 (qi4 che1, car), 床位 (chuang2 wei4, bed), 价格 (jia4 ge2, price), 经济 (jing1 ji4, economy) etc.

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2.2.2 处所词 (Place Name, W)

1. 地方名 (Place names, Wpn)

   It includes all country names, province names, city names and street names etc. For example, 亚洲 (Ya4 zhou1, Asia), 北京 (Beijing), 大阪 (Da4 ban3, Osaka), 长安街 (Chang2 an1 jie1, Changan Street) etc.;

2. 可以作为地方名的机构名 (The names of organizations that may be used as place names, Wog)

   e.g., 宾馆 (bin1 guan3, hotel), 公园 (gong1 yuan2, park), 邮局 (you2 ju2, post office) etc.

Both of these two subcategories Wpn and Wog mentioned above are considered as homographs(兼类词). The words of these two subcategories may be used as noun besides the place name. For example,

- 北京 (Beijing):

  (1) 北京很热. (It is very hot in Beijing.)

  (2) 北京很美. (Beijing is very beautiful.)

  In the first example, the word "北京" is a place name, but in the second one, "北京" is a noun. Although the word "北京" plays the role of subject in both of these Chinese sentences, if it is not distinguished correctly, the result of translation must be wrong.

- 长江 (Yangtze River):

  (1) 长江可以养鱼. (Fish can live in Yangtze River.)

  (2) 长江六千多公里长. (Yangtze River is over 6000 kilometers long.)

  It is the same with the word "长江" which is used as a place name in the first sentence, and it is used as a noun in the second one.

Generally speaking, if the word is used as a political unit or organization, or the sentence describes the features of the place itself, the word is treated as a noun. Otherwise, if the word expresses the place where some events happen, or the sentence describes the natural phenomena in the place, the word will be used as a place name.

3. 合成方位词 (Composed direction words, Wcd)

   The composed direction words are consisted of single direction words combining with "边 (bian2 [儿,er])", "面 (mian4 [儿,er])" and "头 (tou2 [儿,er])" etc. For example, 前面 (qian2 mian4, front), 附近 (fu2 jin4,nearby), 里头 (li3 tou2, inside/inner), 外边 (wai4 bian1, outside) etc.

2.2.3 方位词 (Direction Word, F)

All words that express directions or positions are called direction word. For example, 上 (shang4, up), 下 (xia4, down), 前 (qian2, forward), 后 (hou4, back), 左 (zuo1, left), 右 (you4,

right), 里 (li3, inner), 外 (wai4, outside) etc.

2.2.4　时间词 (Time Word, T)

The time words describe the specific period, date or time etc. It mainly includes the following 9 types:

1. 朝代 (Dynasty names, Td)
   e.g., 唐朝 (tang2 chao2, Tang Dynasty), 宋朝 (song4 chao2, Song Dynasty) etc.;

2. 年份 (Year, Ty)
   e.g., 一九九八年 (yi1 jiu2 jiu2 ba1 nian2, 1998) etc.;

3. 月份 (Month, Tm)
   e.g., 五月 (wu3 yue4, May), 八月 (ba1 yue4, August) etc.;

4. 星期 (Week, Tw)
   e.g., 星期一 (xing1 qi1 yi1, Monday), 星期五 (xing1 qi1 wu3, Friday) etc.;

5. 时间 (Time, Tt)
   e.g., 八点 (ba1 dian3, 8 o'clock), 十点一刻 (shi2 dian3 yi1 ke4, a quarter past ten) etc.;

6. 一天中的时间 (Time of day, Ti)
   e.g., 上午 (shang4 wu3, morning), 中午 (zhong1 wu3, noon), 夜间 (ye2 jian1, night) etc.;

7. 约时 (An approximate time, Ta)
   e.g., 现在 (xian4 zai4, now), 将来 (jiang1 lai2, future), 这会儿 (zhe4 hui4 er, this time) etc.;

8. 节日 (Festival, Tf)
   e.g., 春节 (chun1 jie3, Spring Festival), 儿童节 (er2 tong2 jie3, Children's Day) etc.;

9. 季节 (Season, Ts)
   e.g., 春天 (chun1 tian1, Spring), 夏天 (xia4 tian1, summer), 秋季 (qun1 ji4, the autumn season) etc.

2.2.5　数词 (Numeral, Q)

The numeral includes the following 5 types:

1. 序数词 (Ordinal number, Qor)
   e.g., 第一 (di4 yi1, first), 第二 (di4 er2, second) etc.;

2. 基数词 (Cardinal number, Qca)
   The cardinal number includes all integers from 1 to 9 and 0: 一 (yi1, one), 二 (er4, two), 三 (san1, three), 四 (si4, four), 五 (wu3, five), 六 (liu4, six), 七 (qi1, seven), 八 (ba1, eight), 九 (jiu3, nine), 零 (ling2, zero).

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3. 位数词 (Place of number, Qpn)

The place of number mainly refers to the following 5 words and their composed words: 十 (shi2, ten), 百 (bai3, hundred), 千 (qian1, thousand), 万 (wan4, ten thousand), 亿 (yi4, one hundred million), 百万 (bai3 wan4, hundred thousand), 十亿 (shi2 yi4, a thousand million) etc.

4. 分数词 (Fraction number, Qfn)

The fraction number mainly includes two words:

(1) 分之 (fen1 zhi1): such as 百分之十 (bai3 fen1 zhi1 shi2, ten percent), 三分之一 (san1 fen1 zhi1 yi1, three-first) etc.

(2) 点 (dian3): point, such as 一点五 (yi1 dian3 wu3, one point five) etc.

5. 概数词 (The approximate number, Qan)

This type of numeral expresses an approximate number. For example, 几 (ji3, several), 若干 (ruo4 gan1, a certain number), 半 (ban4, half) etc.

2.2.6   量词 (Classifier, L)

The classifier includes the following types:

1. 个体量词 (Individual classifier, Li)

   e.g. 个 (ge4), 次 (ci4, the number of times), 块 (kuai4, block), 天 (tian1, day), 年 (nian2, year) etc.

2. 集合量词 (Set classifier, Ls)

   e.g. 套 (tao4, set/suit/suite), 批 (pi1, batch/lot), 群 (qun2, group/herd/flock) etc.;

3. 度量词 (Measure classifier, Lm)

   e.g. 尺 (chi3, a unit of length, 1/3 of a meter), 公斤 (gong1 jin1, kilogram), 吨 (dun4, ton) etc.;

4. 不定量词 (Undetermined classifier, Lu)

   e.g. 点儿 (dian3 er, a little/some), 些 (xie4, some);

5. 临时量词 (Temporary classifier, Lt)

   This type of classifier mainly refers to some nouns that are used as classifiers temporarily. e.g. 碗 (wan3: bowl, such as "一碗饭", a bowl of meal), 脸 (lian3, face, such as "一脸汗", a face of sweat) etc.

   The classifiers listed above are generally called "名量词 (noun classifiers)".

6. 动量词 (Action classifier, La)

   This classifiers are mainly used after verbs to indicate the brief action of verbs. e.g.

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一下 (yi1 xia4: such as "看一下", have a look), 一趟 (yi1 tang4: such as "去一趟", have a visit) etc.

2.2.7 代词 (Pronoun, P)

According to the grammatical function, the Chinese pronoun is divided into the following 2 types in our system:

1. 体词性代词 (The pronouns that mainly serve the purpose of subject, object and attribute, Pso)
   This type of pronouns generally serves the purpose of subject or object in Chinese sentence, and it doesn't act as predicate in common. This type of pronoun includes mainly all personal pronouns and some indicative pronouns. e.g. 我 (wo3,I), 他 (ta1,he), 我们 (wo3 men, we), 它们 (ta1 men,they), 这 (zhe4, this), 哪儿 (na3 er, where) etc.

2. 谓词性代词 (The pronouns that may be used as predicates, Ppre)
   Besides the subject and object, some pronouns may be used as predicates in Chinese sentences. This type of pronouns mainly refers to some of "指示代词 (indicative pronouns)", such as 这么 (zhe4 me, so/such), 那样 (na4 yang4, like that/such/so), 怎么 (zen3 me, how/why) etc.

2.2.8 动词 (Verb, V)

The verb here includes two types as follows:

1. 普通动词 (Common verbs,Vcm)
   This type of verbs includes all verbs intransitive and verbs transitive.
   e.g., 预定 (yu4 ding4, schedule), 保留 (bao3 liu2, retain/reserve), 思考 (si1 kao3, think), 说 (shuo1, say/speak/talk), 走 (zou3, go/walk) etc.

2. 趋向动词 (The tendency verbs,Vtd)
   In the Chinese language, the tendency verbs mainly refer to the following special verbs:

   上 (shang4), 下 (xia4), 进 (jin4), 出 (chu1), 回 (hui2), 开 (kai1), 过 (guo4), 起 (qi3), 来 (lai2), 上来 (shang4 lai), 下来 (xia4 lai), 进来 (jin4 lai), 出来 (chu1 lai), 回来 (hui2 lai), 开来 (kai1 lai), 过来 (guo4 lai), 起来 (qi3 lai), 去 (qu4), 上去 (shang4 qu), 下去 (xia4 qu), 进去 (jin4 qu), 出去 (chu1 qu), 回去 (hui2 qu), 开去 (kai1 qu), 过去 (guo4 qu).

   Here, the words "上" and "下" are homographs, and they can be used as direction words.

   The tendency verb is often used after a common verb or an adjective as a tendency complement. See the following examples:

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(a) 他从屋里走 <u>出来</u>.(He came out of the room.)
In this sentence, "出来" is used after verb "走 (come/walk)" as a complement to indicate outward movement or completed action.

(b) 洪水退 <u>下去</u> 了. (The flood has receded.)
Here, "下去"is used after verb "退 (move back)" to indicate movement from a higher position to a lower one.

(c) 天气冷 <u>起来</u> 了. (It is getting cold.)
In this sentence the word "起来" is used after adjective "冷" to indicate the beginning and continuation of the action "冷".

Sometime the tendency verb may be used as a predicate independently or a head word of predicate. For example,
太阳<u>下去</u> 了, 月亮还没 <u>出来</u>. (The sun has set down, but the moon is not rising yet.)

2.2.9 助动词 (Auxiliary Verb, X)

The auxiliary verb includes all verbs that express wishful thinking and possibility. In the Chinese language, the auxiliary verb is of the following characteristics:
◇ The auxiliary verb can only bring object served by verb, adjective or some pronouns(Pre), and it can't bring object served by noun, place name, time word, direction word, numeral or some pronouns(Pso);
◇ The auxiliary verb can't be used in overlapping form;
◇ The word after auxiliary verb can't be "着", "了"or "过";
◇ The auxiliary verb can be used in the format of "X 不 X";
◇ The auxiliary verb may be used independently.

The auxiliary verbs in common use are listed as follows:

能够 (neng2 gou4, can/be able to), 可能 (ke3 neng2, can/may), 愿意 (yuan4 yi4, be willing to/wish), 敢 (gan3,dare), 应该 (ying1 gai1, should), 肯 (ken3, be willing to/be ready to), 值得 (zhi2 de, be worthwhile/be of value), 情愿 (qing2 yuan4, be willing to), 乐意 (le4 yi4, be willing to/be ready to), 可以 (ke3 yi3, can/may), 会 (hui4, can/be able to), 想 (xiang3, want) etc.

2.2.10 判断动词 "是"(Judgement verb "是 (shi4, be)", J)

The judgment verb "是" is generally used between subject and object to express (1)Something is equal to or belongs to another thing; (2)Something is of some characteristics; and (3)Something exists.

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The object after "是" may be a component that often serves the purpose of subject or object, such as noun, pronoun, place name or time word etc., and the object after "是" may be a predicative component, such as verb. For example,

1. 他是 教师. (He is a teacher.)

2. 他是 去读书. (He will go to there for reading books.)

3. 他说的是 好, 但不实用. (What he said is good but not practical.)

2.2.11 形容词 (Adjective, A)

The adjective is used to describe the characteristics and states of matters or things. e.g., 高兴 (gao1 xing4, glad/happy), 美丽 (mei3 li4, beautiful), 优秀 (you1 xiu4, excellent), 好 (hao3, good) etc.

2.2.12 副词 (Adverb, D)

In the Chinese language, all function words that only act as the role of adverbial in Chinese sentences are defined as adverbs. In our classification system of part-of-speech, the adverb is divided into 3 types as follows:

1. 程度副词 (Degree Adverbs, Deg)
   The degree adverbs are mainly used to modify adjectives, few verbs and verb-object structures. For example,

   (a) 这本书 非常难 (A). (This book is very difficult.)
   (b) 他 很能 (X) 干 (V). (He works very hard.)
   (c) 这个孩子 很有 (V) 本事 (N). (The boy has much abilities.)

   Some adverbs in common use are listed as follows:

   很 (hen3, very), 非常 (fei1 chang2, extraordinary / unusual), 最 (zui4, indicating the superlative degree), 特别 (te4 bie2, especially / particularly), 尤其 (you2 qi2, especially / particularly), 稍微 (shao1 wei1, a little / slightly), 十分 (shi2 fen1, very / extremely), 比较 (bi3 jiao4, fairly / quite / rather), 更 (geng4, more/further), 挺 (ting3, very / rather / quite), 太 (tai4, excessively / extremely / very) etc.

2. 否定副词 (Negative Adverbs, Dna)
   In the Chinese language, there are five similar words that have negative meaning. They are "不 (bu4, no/not)", "别 (bie2, don't)", "甭 (beng2, don't/needn't)", "未 (wei4, not/didn't)" and "没 (mei2, there be not/have not/don't)". In our classification system, the words "不", " 别", "甭" and "未" are treated as adverbs. Generally speaking,

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the words "别" and "甭" are only used in Chinese imperative sentences to express the meanings of dissuasion or prohibition, and their meanings are very similar to "不要 (bu2 yao4, don't)" and "不用 (bu2 yong4, needn't)". Both function and meaning of the word "未" are similar to "不", and the word "未" is only used in written language.

However, the word "没" is different from those four words mentioned above. It can not only negate verb and adjective, but also negate noun. Now see the following examples,

(a) 他没 完成 (V) 任务. (He didn't finish his task.)

(b) 那些学生都没 书本 (N). (None of those students have books.)

In the second example given above, the word "没" is used as a verb and serves the purpose of predicate. So, in my opinion it is reasonable that the word "没" is considered as a verb.

3. 其它副词 (Others, Dot)

In this type, 5 sub-types of adverbs are included.

(a) 范围副词 (Scope Adverbs, Dsa)
e.g., 都 (dou1, all/both), 只 (zhi2, only/just) etc.

(b) 时间副词 (Time Adverbs, Dta)
e.g., 立刻 (li4 ke4, at once/immediately), 刚才 (gang1 cai2, just now) etc.

(c) 频度副词 (Frequency Adverbs, Dfa)
e.g., 又 (you4, again), 再三 (zai4 san1, repeatedly/again and again) etc.

(d) 语气副词 (Mood Adverbs, Dma)
e.g., 难道 (nan2 dao4, [make an emphatic rhetorical question]), 居然 (ju1 ran2, unexpectedly/go so far as to) etc.

(e) 方式副词 (Manner Adverbs, Dmn)
e.g., 悄悄 (qiao1 qiao1, quietly/stealthily), 亲自 (qin1 zi4, personally/in person) etc.

2.2.13 介词 (Preposition, R)

The preposition and preposition phrase are not allowed to use independently or serve as predicate independently. After each preposition there must be another component. The preposition phrases are mainly used as adverbial in Chinese sentences to indicate matter, time, place, form and scope that are related to the behavior, action and characteristics.

In our classification system, the preposition is divided into 6 sub-categories as follows:

1. 用于引出施事的介词 (Prepositions for introducing the agent, Rag)
e.g., 被 (bei4, introducing the agent in a passive sentence), 叫 (jiao4), 让 (rang4), 由 (you2) etc.

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2. 用于引出受施的介词 (Prepositions for introducing the object or patient ,Rob)

   e.g., 把 (ba4, The usage of "把" often causes inversion with the object placed before the verb.).

3. 用于引出与事的介词 (Prepositions for introducing the dative, Rda)

   e.g., 跟 (gen1, with), 给 (gei3, for), 对 (dui4, to/for), 为 [了](wei2[le], for), 比 (bi2, than) etc.

4. 用于引出工具的介词 (Prepositions for introducing the tool case, Rtl)

   e.g. 用 (yong4, by using of), 以 (yi3, according to) etc.

5. 用于引出处所, 时间和范围等的介词 (Prepositions for indicating the place, time, condition or scope etc., Rpt)

   e.g., 从 (cong2, from/pass by), 到 (dao4,to), 在 (zai4, in/on), 于 (yu2, in/on) etc.

6. 其它介词 (Others, Rot)

   e.g., 根据 (gen1 ju4, according to), 关于 (guan1 yu2, on/about) etc.

In the modern Chinese language, most of the prepositions are homographs and they may be used as verb, because they are evolved from verb. See the following examples,

- 到 (dao4):

  1. 他今天 到 (V) 了北京. (Today he arrived in Beijing.)

  2. 他 到 (R) 北京 出差去 了. (He was on a business trip in Beijing.)

- 给 (gei3):

  1. 他 给 (V) 我一支笔. (He gave me a pen.)

  2. 他 给 (R) 我 讲 了一个故事. (He told me a story.)

- 用 (yong4):

  1. 我 用 (V) 一下这支笔. (I want to use this pen.)

  2. 我 用 (R) 钢笔 写 字. (I am writing with a pen.)

- 在 (zai4):

  1. 我今天 在 (V) 家. (Today I am at home.)

  2. 我 在 (R) 家 读 书. (I am reading books at home.)

- 比 (bi3):

  1. 我们 比 (V)[一] 比 (V) 看谁高. (Let's see who is taller?)

2. 我比 (R) 你高. (I am taller than you.)

From the examples given above, we can get the following method to judge if a word is the preposition.

Assume W_1 is a word to be judged, W_2 and W_3 are two successive words or phrases after W_1. If one of the following conditions is satisfied, the word W_1 will be judged as a verb.

1. W_2 is an auxiliary word (such as "着", "了", "过" or "得" etc., like example "到": 1);

2. W_1 is used in overlapping form (like example "比": 1);

3. W_2 is a numeral and classifier or a classifier (like example "用": 1);

4. There is no verb after W_1 (like example "给": 1, "在": 1).

Correspondingly, if W_3 is a verb or adjective, the word W_1 will be judged as a preposition.

2.2.14 连词 (Conjunction, C)

The conjunction is divided into 3 types as follows:

1. 词 / 词组连接词 (Word or phrase conjunctions, Cwp)
   This type of conjunctions is generally used to connect words or phrases and not used to connect clauses or simple sentences.
   e.g., 和 (he2, and/together with), 跟 (gen1), 与 (yu3), 同 (tong2), 及 (ji2) etc.

2. 分句 / 句子连接词 (Clause or sentence conjunctions, Ccs)
   This type of conjunctions is generally used to connect clauses or sentences and not used to connect words or phrases.
   e.g., 不但 (bu4 dan1, not only), 所以 (suo3 yi3, therefore/so), 如果 (ru2 guo3, if/in case) etc.

3. 双功能连接词 (Two-functional conjunctions, Ccw)
   This type of conjunctions is both used to connect words, phrases and clauses or sentences.
   e.g., 并且 (bing4 qie3,and/besides/furthermore), 而且 (er2 qie3,and also/moreover), 或者 (huo4 zhe3,or), 并 (bing4, and), 而 (er2, but/yet), 还是 (hai2 shi4, or) etc.

2.2.15 助词 (Auxiliary Word, H)

The auxiliary word here includes the following 2 types:

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1. 结构助词 (Structure auxiliary words, Hs)

This type of auxiliary words mainly includes the following words:

◇ 的: de. (i) It is used after a noun, a verb or a pronoun etc. as an attribute; (ii) It is used between the subject noun and the verb, functioning similarly as 'of' etc.

◇ 所: suo3. It is (i)used together with "为" or "被" to indicate a passive construction; (ii)used before a verb as the agent of the action; (iii)used before a verb which takes an object.

◇ 地: de. It is used after an adjective, a noun or a phrase to form an adverbial adjunct before the verb.

◇ 得: de. It is used between a verb or an adjective and its complement to indicate result, possibility or degree.

◇ 似的: si4 de. It is used after a noun, a verb or an adjective to indicate that something is similar to the noun or some features or state is similar to what the verb or adjective describes. It often appears together with "好像" or "像".

◇ 般: ban4. It is the same with the usage of the word "似的".

2. 时态助词 (Tense auxiliary words, Ht)

Generally speaking, tense auxiliary words include 3 words: 着(zhe), 了 (le), 过 (guo), and they are used after verbs to indicate the tense of verbs. The word "着" generally indicates the present tense of verb, and "了" and "过" indicate the past tense of verb. For example:

(a) 他正 看着 这本书. (He is reading this book.)

(b) 他去年 看过 这本书. (He read this book in last year.)

(c) 昨天他 去了 东京. (He went to Tokyo yesterday.)

2.2.16 语气词 (Mood Auxiliary Word, M)

The mood auxiliary word is generally used at the end of a Chinese sentence to express some special moods, For example,

◇ 吗: ma. It is used at the end of a declarative sentence to transform it into a question.

◇ 呢: ne. It is (i)used at the end of an interrogative sentence; (ii)used at the end of a statement to give emphasis; (iii)used to make a pause within a sentence.

◇ 啊: a, Oh. It is a cry of surprise or amazement.

◇ 罢了: ba le. It is used to indicate reluctance or displeasure on the part of the speaker.

◇ 吧: ba. It is used at the end of a sentence to indicate suggestion, request, command, agreement, doubt or indicate a pause suggesting a dilemma etc.

The word "了" can be used as tense auxiliary word or mood auxiliary word according to the different context. (1) If the word or phrase before "了" is a noun, a noun phrase or other words or phrases that are mainly used as subject or object, especially when "了" is used at

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the end of a sentence, the "了" will be judged as a mood auxiliary word. (2) If the word before "了" is a verb, the "了" will be treated as a tense auxiliary word. (3) If "了" is used at the end of a sentence and the word before it is a verb, "了" may be a mood auxiliary word, and it may be a tense auxiliary word. It should be judged according to the context. If there is an obvious time word or a phrase or a time adverb to indicate that the action is already finished, "了" will be treated as a tense auxiliary word. Otherwise, it will be considered as a mood auxiliary word. See the following examples and take notice of Example 3 and Example 4.

1. 他在这里已经生活五 (Q) 年 (L) 了. (He has lived here for five years.)
   In this sentence, the phrase "五年" is a numeral and classifier phrase, so the word "了" acts as the role of mood auxiliary word.

2. 我已经知道 (V) 了这个消息.(I have already known this message.)
   In this example, the word "知道" is a verb, and the word "了" is not at the end of the sentence, so the word "了" is easily judged as a tense auxiliary word.

3. 昨天他听完这个故事后笑 (V) 了. (Yesterday when he heard the story, he smiled.)
   In this example, the word "昨天" indicates that the action of smiling already finished yesterday. So, the word "了" is considered as a tense auxiliary word in this sentence.

4. 他笑 (V) 了. (Look, he is smiling.)
   In this example, the word "了" is used at the end of the sentence, and the word before it is a verb, but there is no a time word to indicate that the action of smiling is finished. So, "了" will be judged as a mood auxiliary word.

   The word "了" may be used after the other two tense auxiliary words "着" or "过". In this case, the word "了" will be considered as a mood auxiliary word. For example,

1. 我知道那里你去过了. (I know that you have been there.)

2. 他最近凉着了. (Recently he has caught a cold.)

2.2.17   拟声词 (Sound Imitation Word, Y)

This category of words is used to imitate some sound or voice. e.g. 哗啦 (hua1 la1, Imitating the sound made by gurgling water.). In Chinese sentence, the sound imitation word may be used as adverbial, attribute, predicate, complement and independent phrase etc. It also can become a clause or sentence.

2.2.18   习惯用语 (Idiom, I)

The idioms in our classification system include the following 3 types:

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1. 敬语 (Respect Words or Phrases, Irp)

   The respect words or phrases are often used to express greetings or acknowledgments, especially at the beginning or the end of a talk. Of course some of them are of features of verbs, e.g., 谢谢 (xie4 xie4, thank), 久仰 (jiu3 yang3, I am very pleased to meet you) etc. These words can be considered as verbs, but some of them are never used with objects or any other components, e.g., 早安 (zao3 an1, Good morning), 您好 (how are you) etc. In my opinion, these phrases can be treated as idiom, a special category, together with the following 2 types.

2. 插入语 (Insert phrases or words, Iip)

   e.g. 老实说 (to tell the truth), 总而言之 (summarily/in conclusion) etc.;

3. 感叹词和呼应语 (Interjection & Response words or phrases, Iir)

   The interjection is commonly used to express strong feeling or reply opposite side of speaker. For example, 哦 (e4, to indicate response or agreement.), 哎呀 (ai1 ya1, expressing surprise.), 喂 (wei2, hello), etc. The interjection words are often used independently or at the beginning of a sentence. In spoken language, some idioms are most frequently used to express some special fixed meanings, such as "是的 (shi4 de, yes)", "好的 (hao3 de, OK)" etc. They are not words according to the standards of Chinese word segmentation, but if they are broken, their meanings will be changed and the difficulty to parse them will be increased. What is more, the grammatical functions of these idioms are all the same as interjection. So, I treat them as a special subcategory of idioms. Well, it is better to determine these special idioms by using statistical method based on large scale corpus.

2.3 Explanatory Notes to the Division of Part-of-speech

Some words are called "区别词" or "简别词"(distinction word) in some books on Chinese grammar, like "男 (nan2, male)", "直接 (zhi2 jie1, direct/immediate)", "阴性 (yin1 xing4, negative)" etc., which play the role of distinction in sentences. In my opinion, some of these words often act as nouns, and some of them act as adjectives or adverbs. So, for decreasing the number of homographs and for reducing the confusion, I didn't specially set up the category of distinction words. The distinction words that have characteristics of noun are treated as noun, such as "积极性 (ji1 ji2 xing4, enthusiasm/initiative/zeal)". The distinction words that have meanings of adjectives are classified into the category of adjective, such as "绝对 (absolute)". And it is the same with those mentioned above.

3 The Parsing Rules for the Chinese Language

3.1 The Basic Symbols

1. Each part-of-speech is expressed respectively by using the symbols given in "Division and Description of Part-of-speech of Chinese Words".

2. The phrase names are defined as follows respectively:
   NP(名词短语): Noun Phrase;
   VP(动词短语): Verb Phrase;
   DP(副词短语): aDverb Phrase;
   RP(介词短语): pReposition Phrase;
   AP(形容词短语): Adjectival Phrase;
   TP(时间词短语): Time Phrase;
   QP(数词短语): numeral phrase;
   QL(数量词短语): numeral and classifier phrase;
   PP(代词短语): Pronoun Phrase;
   WP(地点名短语): place name phrase;
   JP(断词短语): Judgement Phrase;
   XP(助动词短语): auXiliary verb Phrase;
   YP(拟声词短语): sound imitation phrase;
   FP(方位词短语): direction and position phrase;
   CS(分句): ClauSe;
   S(句子): Sentence.

3. Each operator expresses the following meanings respectively:
   "+" means "AND";
   "$\Longrightarrow$" means "will be reduced to";
   "/" means "OR";
   "( )" means content in the brackets is explanatory notes to the word or phrase on the left of the brackets;
   "[ ]" means content in the brackets maybe doesn't exist;
   The underline and "{ }" indicate the contents that can be considered as a relative independent component.

3.2 The Parsing Rules

3.2.1 以名词为首的短语规则 (The rules whose left side starts from "N" or "NP")

1. N $\Longrightarrow$ NP

2. NP + NP $\Longrightarrow$ NP

(a) 计算机 (computer,N) + 技术 (technology,N);

(b) 木头 (wood,N) + 椅子 (chair,N);

3. NP(NHuman) + WP+"人" $\Longrightarrow$ CS

鲁迅 (Lu Xun) + 绍兴 (Shaoxing,W) + 人 (people,N).

4. NP +C(Cwp / Ccw) + NP $\Longrightarrow$ NP

计算机 (computer, N) + 键盘 (keyboard, N) + 和 (and, C) + 屏幕 (screen, N);

5. NP^1 + XP $\Longrightarrow$ CS

小李 (Xiaoli,N) / 他 (he, P) + 很 (very,D) + 愿意 (like/want,X).

6. NP* + XP + AP $\Longrightarrow$ CS

(a) 他 (he, P)+ 肯定 (must, X)+ 高兴 (glad, A).

(b) 青岛 (Tsingdao, W)+ 应该 (should, X)+ 凉快 (nice and cool, A).

(c) 夏天 (summer, T)+ 可能 (maybe, X)+ 热 (hot, A).

(d) 飞机 (airplane, N)+ 应该 (should, X)+ 快 (fast, A).

7. NP^1 + XP + P(Pre) $\Longrightarrow$ CS

(a) 他 (he, P)+ 应该 (should, X)+ 这样 (so, P(Pre)).

(b) 小李 (Xiaoli, N)+ 不 (not, D)+ 会 (can, X)+ 这样 (so, P(Pre)).

8. NP* + VP $\Longrightarrow$ CS

(a) 学生 (student,N) + 必须 (must,D) + 学习 (study,V).

(b) 他 (he, P)+ 学习 (study, V)+ 日语 (Japanese, N).

(c) 前面 (in the front, W) + 有 (there be, V)+ 人 (people, N).

(d) 八月 (August, T) + 放假 (have holiday, V).

9. NP^1 + VP + QL $\Longrightarrow$ CS

(a) 铃木 (suzuki, N) + 想 (want, X) + 住 (live, V) + 三 (three, Q) + 天 (day, L).

(b) 他 (he, P)+ 跳过 (jump, V)+ 两 (two, Q)+ 米 (meter, L).

10. NP^1 + VP + CS $\Longrightarrow$ CS

我们 (he, P) + 知道 (know, V) + { 她 (she, P) + 是 (be, J) + 个 (Ge, L) + 英雄 (hero, N)}.

11. NP^1 + VP + "的" $\Longrightarrow$ P(Pso)

{ 老王 (Laowang, N) + 介绍 (introduce, V) + 的 (De, H)} + 是 (be, J) + 小李 (Xiaoli, N).

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12. NP* + AP ⟹ CS

    (a) 这个 (this, P) + 花园 (park, N) + 很 (very, D) + 漂亮 (beautiful, A).

    (b) 北京 (Beijing, W) + 很 (very, D) + 大 (big, A).

    (c) 他 (he, P) + 很 (very, D) + 聪明 (clever, A).

    (d) 夏天 (summer, T) + 很 (very, D) + 热 (hot, A).

13. NP + NP + AP ⟹ CS
父亲 (father, N) + 儿子 (son, N) + 一样 (same, A) + 高 (high, A).

14. NP* + AP + QP ⟹ CS

    (a) 箱子 (box, N) + 重 (heavy, A) + 三十 (thirty, Q) + 公斤 (kilogram, L).

    (b) 他 (he, P) + 小 (young, A) + 两 (two, Q) + 岁 (year, L).

    (c) 二月 (February, T) + 少 (little, A) + 一 (one, Q) + 天 (day, L).

    (d) 北京 (Beijing, W) + 早 (early, A) + 三百 (three hundred, Q) + 年 (year, L).

15. NP + JP ⟹ CS
这 (this, P) + 台 (Tai, L) + 计算机 (computer, N) + 是 (be, J) + 我 (I, P) + 的 (De, H).

16. NP + JP + CS ⟹ CS
原因 (reason, N) + 是 (be, J) + { 我 (I, P) + 昨天 (yesterday, T) + 没 (did not, V) + 来 (come, V) + 参加 (attend, V) + 会议 (meeting, N)}.

17. NP^1 + TP + Q[L] ⟹ CS
张飞 (Zhangfei, N) / 他 (he, P) + 今年 (this year, T) + 三十二 (thirty two, Q)[+ 岁 (sui, L)].

18. NP* + Q[L] ⟹ CS

    (a) 铃木和夫 (suzukikazuo, N) / 他 (he, P) + 三十二 (thirty two, Q)[+ 岁 (sui, L)].

    (b) 广场 (square, W) + 内 (inner, F) + 五十 (fifty, Q) + 米 (meter, L).

    (c) 八月 (August, T) + 三十一 (thirty one, Q) + 天 (day, L).

19. NP + QL ⟹ NP
{ 张三 (Zhangsan, N) + 和 (and, C) + 李四 (Lisi, N) + 两 (two, Q) + 人 (people, N)} + 没来 (don't come, V).

20. NP^1 + TP + VP ⟹ CS
铃木和夫 (suzukikazuo, N) / 他 (he, P) + 星期三 (Wednesday, T) + 来 (come, V).

21. NP^1 + WP + VP ⟹ CS
李四 (Lisi, N) / 他 (he, P) + { 家 (home, N) + 里 (Li, F)} + 有 (have, V) + 很 (very, D) + 多 (many, A) + 书 (book, N).

22. NP + P(Pso) ⟹ NP
{ 小王 (Xiaowang, N) + 自己 (oneself, P)} + 并 (Bing, D) + 不 (not, D) + 知道 (know, V)
+ 这 (this, P) + 件 (Jian, L) + 事 (matter, N).

23. NP + P(Ppre) ⟹ CS

(a) 味道 (taste/smell, N) + 怎么样 (how, Ppre)?

(b) 北京 (Beijing, W) + 怎么样 (how, Ppre)?

(c) 他 (he, P) + 怎么样 (how, Ppre)?

(d) 最近 (in recent days, T) + 怎么样 (how, Ppre)?

24. NP* + RP + VP ⟹ CS

(a) 小李 (Xiaoli, N) / 他 (he, P)+ 为了 (for, R) + 健康 (health, N)+ 锻炼 (take physical exercise, V).

(b) 北京 (Beijing, W)+{ 为 (for, R)+ 改造 (change, V)+ 环境 (environment, N)}+ 整顿 (rectify, V) + 交通 (traffic, N).

(c) 最近 (in recent days, T)+{ 在 (in, R)+ 北京 (Beijing, W)}+ 开会 (hold meeting, V).

25. NP* + C(Ccs) + VP ⟹ CS
违反 (violate, V) + 交通 (traffic, A) + 规则 (rule, N) + 是 (be, J) + 不 (not, D) + 允许 (allow, V) + 的 (De, H), { 你 (you, P)+ 何况 (let alone, C) + 没有 (haven't, V)+ 驾驶 (drive, V) + 执照 (license, N)}.

26. NP* + RP + AP ⟹ CS

(a) 父亲 (father, N) + { 比 (than, R) + 他 (he, P)} + 高 (high, A).

(b) 他 (he, P)+{ 对 (Dui, R)+ 我 (I, P)}+ 好 (good, A).

(c) 北京 (Beijing, W)+{ 比 (than, R)+ 这里 (here, W)}+ 热 (hot, A).

(d) 夏天 (summer, T)+{ 比 (than, R)+ 春天 (Spring, T)}+ 热 (hot, A).

27. NP^1 + RP ⟹ CS
老虎 (tiger, N) / 它 (it, P)+ { 被 (bei, R) + 打 (beat, V) + 了 (Le, Ht)}.

28. NP^1 + WP ⟹ WP

(a) { 房子 (house, N) + 附近 (nearby, W)} + 有 (there be, V) + 树 (tree, N).

(b) { 他 (he, P) + 周围 (nearby, W)}+ 有 (there be, V)+ 人 (people, N).

29. NP + F ⟹ WP
{ 桌子 (table, N) + 上 (Shang, F)} + 一 (one, Q) + 个 (Ge, L) + 杯子 (cup, N).

30. $NP^1 + M \Longrightarrow NP$

    (a) { 大海 (sea, N) + 啊 (oh, M)} + 我 (I, P) + 的 (De, H) + 故乡 (home town, N).

    (b) { 他 (he, P)+ 呀 (Ya, M)}+太 (too, D)+ 固执 (obstinate, A).

31. $NP + L \Longrightarrow L$

    (a) + (ten,Q)+ { 车 (car, N) + 公里 (kilometer, L)};

    (b) +二 (twelve,Q)+{ 人 (man, N) + 年 (year, L)};

32. $NP + CS \Longrightarrow S$
这 (this, P) + 事 (matter, N) + { 我 (I, P) + 会 (will, X) + 永远 (forever, D) + 记 (remember, V) + 在 (in, R) + 心 (heart, N) + 里 (Li, F)}.

33. $NP \Longrightarrow CS$

34. $NP \Longrightarrow NP*$

35. $NP \Longrightarrow NP^1$

36. $NP* +$ "的" $\Longrightarrow P(Pso)$

    (a) { 学校 (school, N) + 的 (De, H)} + 和 (and, C) + { 公司 (company, N) + 的 (De, H)} + 不 (not, D) + 一样 (as same as, A).

    (b) 这 (this, P) + 个 (Ge, L) + 代表团 (delegation, N) + 是 (be, J)+{ 东京 (Tokyo, W) + 的 (De, H)}.

    (c) 那 (that, P) + 票 (ticket, N) + 是 (be, J) + { 昨天 (yesterday, T) + 的 (De, H)}.

37. $NP +$ "的" $+ AP \Longrightarrow AP$
反应 (reaction, N) + 的 (De, H) + 强烈 (violent, A);

38. $NP^1 +$ "的" $+ VP \Longrightarrow VP$

    (a) 经济 (economic, N) + 的 (De, H) + 发展 (develop, V);

    (b) { 他 (he, P)+ 的 (De, H) + 到来 (come, V)} + 使 (make, V)+ 大家 (all, P) + 感到 (feel, V) + 意外 (unforeseen, A).

3.2.2 比况短语规则 (The rules involving comparison)

  1. NP + "似的"/"般"/"一般"/"一样" $\Longrightarrow$ AP

    (a) 暴风雨 (rain-storm, N) + 般 (Ban, H) + 的 (De, H) + 掌声 (applause, N);

    (b) 石头 (stone, N) + 似的 (like, H) + 站 (stand, V) + 着 (zhe, H);

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2. 好像／像＋NP＋"一般"/"一样"/"般"/"似的" $\Longrightarrow$ AP

    (a) 好像 (like, V) ＋ 火 (fire, N) ＋ 一样 (same, A) ＋ 热 (hot, A);

    (b) 像 (like, V) ＋ 镜子 (mirror, N) ＋ 似的 (Si de, H) ＋ 平 (plain, A);

    (c) 镜子 (mirror, N) ＋ 般 (Ban, H) ＋ 的 (De, H) ＋ 平 (plain, A);

3. 好像／像＋VP＋"一般"/"一样"/"般"/"似的" $\Longrightarrow$ AP
  好像 (like, V) ＋ 认识 (know, V) ＋ 一样 (same, A);

4. AP ＋ "似的"/"般"/"一般"/"一样" $\Longrightarrow$ AP
  死 (dead, A) ＋ 一样／一般 (same, A) ＋ 寂静 (silent, A);

3.2.3 以动词为首的短语规则 (The rules whose left side starts from "V" or "VP")

1. V $\Longrightarrow$ VP

2. VP ＋ VP $\Longrightarrow$ VP
  { 去 (go, V) ＋ 采购 (buy, V)} ＋ 食品 (food, N).

3. VP ＋ VP $\Longrightarrow$ CS

    (a) 请 (please, V) ＋ 坐 (sit, V) ＋ 着 (zhe, Ht) ＋ 吃 (eat, V).

    (b) 锻炼 (do physical exercise, V) ＋ 有益 (benefit, V) ＋ 健康 (health, N).

4. VP ＋ JP $\Longrightarrow$ CS
  站 (stand, V) ＋ 着 (zhe, Ht) ＋ 是 (be, J) ＋ 对 (right, A) ＋ 的 (De, H).

5. VP ＋ JP ＋ VP $\Longrightarrow$ CS
  吸烟 (smoking, N) ＋ 就 (Jiu, D) ＋ 是 (be, J) ＋ 自杀 (commit suicide, V).

6. VP ＋ NP* $\Longrightarrow$ VP

    (a) 写 (write, V) ＋ 论文 (paper, N);

    (b) 去 (go, V) ＋ 东京 (Tokyo, W);

    (c) 请教 (ask for, V) ＋ 他 (he, P);

    (d) 喜欢 (like, V) ＋ 过 (spend, V) ＋ 星期天 (Sunday, T)

7. VP ＋ NP* ＋ VP $\Longrightarrow$ VP

    (a) 买 (buy, V) ＋ 苹果 (apple, N) ＋ 吃 (eat, V).

    (b) 去 (go, V) ＋ 东京 (Tokyo, W) ＋ 玩 (play, V).

    (c) 找 (find, V) ＋ 他 (he, P) ＋ 玩 (play, V).

(d) 打算 (plan, V) + 星期天 (Sunday, T) + 打 (play, V) + 篮球 (basketball, N).

8. VP + NP* + RP $\Longrightarrow$ VP

   (a) 规定 (stipulate/fix/set, V) + 明天 (tomorrow, T) + 为 (wei, R) + 节日 (holiday, N).

   (b) 推选 (elect, V) + 小李 (Xiaoli, N) / 他 (he, P) + 为 (wei, R) + 代表 (representative, N).

   (c) 确定 (decide, V) + 北京 (Beijing, W) + 为 (wei, R) + 首都 (capital, N).

9. VP + NP^1 + NP $\Longrightarrow$ VP
   送给 (give/present, V) + 小李 (Xiaoli, N) / 他 (he, P) + 礼物 (gift, N).

10. VP + RP $\Longrightarrow$ VP
    他 (He, P) + { 来 (come, V) + 自 (from, R) + 北京 (Beijing, W) }.

11. VP + P(Pso) + DP $\Longrightarrow$ CS
    睡 (sleep, V) + 了 (Le, H) + 吧 (ba, M) + 他们 (they, P) + 都 (all, D)?

12. VP + AP $\Longrightarrow$ VP

    (a) 把 (Ba, R) + 房间 (room, N) + { 打扫 (sweep, V) + 干净 (clean, A)}.

    (b) 他 (he, P) + { 感觉 (feel, V) + 挺 (very, D) + 好 (good, A)}.

13. VP + AP $\Longrightarrow$ CS

    (a) { 去 (go, V) + 北京 (Beijing, W) } + 不错 (good, A).

    (b) { 跳 (jump, V) + 下去 (down, V) } + 很 (very, D) + 危险 (dangerous, A).

14. VP + DP $\Longrightarrow$ VP
    考虑 (think/consider, V) + 再三 (repeatedly, D);

15. VP + P(Ppre) $\Longrightarrow$ VP
    认为 (consider/think, V) + 怎么样 (how, P(Ppre));

16. VP + C(Cwp/Ccw) + VP $\Longrightarrow$ VP
    { 分析 (analyze, V) + 研究 (research, V) + 和 (and, C) + 解决 (resolve, V)} + 问题 (problem, N);

17. VP + H(Ht) $\Longrightarrow$ VP
    他 (he, P) + { 站 (stand, V) + 着 (zhe, Ht)};

18. VP + M $\Longrightarrow$ VP
    开动 (start, V) + 吧 (ba, M).

19. VP + CS $\Longrightarrow$ CS

    (a) 请 (please, V) + 相信 (believe, V) + { 胜利 (success, N) + 属于 (belong to, J) + 我们 (we, P)}.

    (b) 看 (see, V) + 了 (Le, H) + { 他 (heart, N) + 心 (heart, N) + 里 (Li, F) + 不 (not, D) + 舒服 (comfortable, A)}.

20. VP + AP + "的" $\Longrightarrow$ P(Pso)
{ 看见 (see, V) + 最 (most, D) + 早 (early, A) + 的 (De, H)} + 是 (be, J) + 我 (I, P).

21. VP + "的" + AP + "的" $\Longrightarrow$ P(Pso)
{ 做 (do, V) + 的 (De, H) + 最 (most, D) + 好 (good, A) + 的 (De, H)} + 是 (be, J) + 他 (he, P).

22. VP + AP + "点儿 / 一点儿 / 一些 / 些" $\Longrightarrow$ VP
你 (you, P) + { 说 (speak, V) + 慢 (slow, A) + 点儿 (Dian er, L)}.

23. VP + "得 / 的" + CS $\Longrightarrow$ CS

    (a) 吓 (frighten, V) + 得 (De, H) + { 他 (he, P) + 紧张 (nervous, A)}.

    (b) 打 (beat/hit) + 得 (De, H) + { 他 (he, P) + 哭 (cry, V) + 了 (Le, H)}.

24. VP + "的" $\Longrightarrow$ P(Pso)
{ 说话 (speak, V) + 的 (De, H)} + 是 (be, J) + 我 (I, P) + 老师 (teacher, N).

25. VP + "的" + AP $\Longrightarrow$ AP
{ 发展 (develop, V) + 的 (De, H) + 快 (fast, A) + 慢 (slow, A)} + 取决 (depend on, V) + 于 (on, R) + 科学 (science, N) + 技术 (technology, N) + 水平 (level, N).

26. VP + "得" + AP $\Longrightarrow$ VP

    (a) 理解 (understand, V) + 得 (De, H) + 深刻 (deep, A);

    (b) 打扮 (dress up, V) + 得 (De, H) + 很 (very, D) + 漂亮 (pretty/beautiful, A).

27. VP + "不 / 没" + VP $\Longrightarrow$ VP
写 (write, V) + 不 (not, D) + 写 (write, V) + 报告 (report, N)?;

28. VP + QL $\Longrightarrow$ VP

    (a) 提前 (do sth.in advance, V) + 三 (three, Q) + 个 (Ge, L) + 月 (month, L);

    (b) 我 (I, P) + { 用 (use, V) + 一下 (Yixia, L)} + 这 (this, P) + 支 (zhi, L) + 笔 (pen, N).

29. VP + "个" $\Longrightarrow$ VP

(a) 笑 (laugh, V) + 个 (Ge, L) + 不 (not, D) + 停 (stop, V);

(b) 看 (see, V) + 个 (Ge, L) + 够 (enough, A);

30. VP + RP + AP $\Longrightarrow$ CS

笑 (laugh, V) + 比 (than, R) + 哭 (cry, V) + 好 (good, A).

31. VP + "没有" $\Longrightarrow$ CS

睡 (sleep, V) + 了 (Le, Ht) + 没有 (have not/there be not, V);

32. "[没] 有" + QL/P(Pre) + AP $\Longrightarrow$ VP

(a) 有 (have, V) + 三 (three, Q) + 米 (meter, L) + 高 (high, A).

(b) 没有 (have not/there be not, V) + 那么 (so, P(Pre)) + 好 (good, A).

33. "有" + NP^1 + "没有" $\Longrightarrow$ CS

(a) 有 (have, V) + 他 (he, P) + 没有 (haven't, V) ?

(b) 有 (have, V) + { 这样 (such, P) + 的 (De, H)} + 没有 (haven't, V)?

(c) 有 (have, V) + { 明天 (tomorrow, T) + 去 (go, V) + 东京 (Tokyo, W) + 的 (De, H)} + 没有 (haven't, V) ?

(d) 有 (have, V) + { 好 (good, A) + 的 (De, H)} + 没有 (haven't, V) ?

34. "有没有" + NP^1 $\Longrightarrow$ CS

(a) 有没有 (whether have, V) + 他 (he, P) ?

(b) 有没有 (whether have, V) + 学生 (student, N) ?

35. NP^1 + "[没] 有吗" $\Longrightarrow$ CS

(a) 学生 (student, N)+ 没有 (haven't, V) + 吗 (ma, M) ?

(b) { 明天 (tomorrow, T)+ 去 (go, V)+ 东京 (Tokyo, W)+ 的 (De, H) } + 有 (have, V) + 吗 (ma, M)?

36. NP^1+ "有没有" $\Longrightarrow$ CS

(a) 学生 (student, N)+ 有没有 (whether have, V)?

(b) { 明天 (tomorrow, T) + 去 (go, V) + 的 (De, H)} + 有没有 (whether have, V)?

37. VP $\Longrightarrow$ CS

可以 (may, X) + 预定 (book, V);

38. "所" + VP ⟹ P(Pso)

他 (he, P) + 的 (De,H) + 日记 (diary,N) + 真实 (real,D) + 地 (De,H) + 记录 (write down, V) + 了 (Le,H) + 那些 (those,P) + 日子 (day,N) + 里 (Li, F) + 他 (he,P) + 的 (De,H) + 所 (Suo, H) + 思 (think,V) + 和 (and, C) + 所 (Suo, H) + 求 (need, V).

39. "所" + VP + "的" ⟹ P(Pso)

他 (he, P) + { 所 (Suo, H) + 说 (say, V) + 的 (De, H)} + 只有 (only, D) + 这些 (these, P).

40. VP + F ⟹ VP

    (a) { 靠 (keep to, V) + 右 (right, F)} + 的 (De, H) + 是 (be, J) + 老师 (teacher, N).

    (b) { 靠 (keep to, V) + 左 (left, F)} + 走 (walk, V);

    (c) { 退 (move back, V) + 后 (behind, F)} + 一 (one, Q) + 步 (step, N).

3.2.4 以助动词为首的短语规则 (The rules whose left side starts from "X" or "XP")

1. X ⟹ XP

2. XP + XP ⟹ XP

他 (he, P) + { 应该 (should, X) + 愿意 (like/want, X)} + 去 (go, V).

3. XP + VP ⟹ VP

明天 (tomorrow, T) + 他 (he, P) + { 将 (will, X) + 出差 (be on a business trip, V)}.

4. XP + JP ⟹ JP

{ 可能 (may, X) + 是 (be, J)} + 他 (he, P).

5. X + "不" + X ⟹ XP

{ 能 (can, X) + 不 (not, D) + 能 (can, X)} + 快 (quickly, D) + 来 (come, V)?

6. XP + CS ⟹ CS

应该 (should, X) + { 你 (you, P) + 处理 (process, P) + 这 (this, P) + 件 (Jian, L) + 事 (matter, N)}.

7. XP + AP ⟹ AP

学习 (study, V) + { 应该 (should, X) + 认真 (conscientious, A)}.

8. XP + PP(Pre) ⟹ PP(Pre)

他 (he, P) + { 应该 (should, X) + 这样 (so/like this, P(Pre))}.

3.2.5 以断词为首的短语规则 (The rules whose left side starts from "J" or "JP")

1. $J \Longrightarrow JP$

2. $J + NP^* \Longrightarrow JP$

    (a) 他 (he, P) + 是 (be, J) + 大夫 (doctor, N).

    (b) 这 (this, P) + 是 (be, J) + 京都 (Kyoto, W).

    (c) 这 (this, P) + 照片 (picture, N) + 上 (Shang, F) + 的 (De, H) + 人 (people, N) + 是 (be, J) + 他 (he, P).

    (d) 今天 (Today, T) + 是 (be, J) + 星期三 (Wednesday, T).

3. $J + NP^* + VP \Longrightarrow CS$

    (a) 是 (be, J) + 他 (he, P) + 帮助 (help, V) + 了 (Le, H) + 我 (I, P).

    (b) 是 (be, J) + 5 月 6 号 (June 6th, T) + 离开 (leave, V) + 了 (Le, H) + 北京 (Beijing, W).

    (c) 是 (be, J) + 计算机 (computer, N) + 改变 (change, V) + 了 (Le, H) + 人们 (people, N) + 的 (De, H) + 生活 (life, N).

    (d) 是 (be, J) + 神户 (Kobe, W) + 建造 (build, V) + 了 (Le, H) + 这 (this, P) + 座 (Zuo, L) + 大 (big, A) + 桥 (bridge, N).

4. $J + PP \Longrightarrow JP$

    (a) 这 (this, P) + 书 (book, N) + 的 (De, H) + 作者 (author, N) + 是 (be, J) + 我 (I, P).

    (b) 事情 (matter, N) + 原来 (originally, D) + 是 (be, J) + 这样 (so, P).

5. $J + AP \Longrightarrow JP$
他 (he, P) + 是 (be, J) + 那么 (so, D) + 认真 (serious, A).

6. $J + AP + $ "的" $\Longrightarrow JP$
鲜花 (flower, N) + 是 (be, J) + 美丽 (beautiful, A) + 的 (De, H).

7. $J + Q[L] \Longrightarrow JP$
实际 (real, A) + 年龄 (age, N) + 是 (be, J) + 十八 (eighteen, Q)[岁 (sui, L)].

8. $J + RP \Longrightarrow JP$
我 (I, P) + 第一 (first, Q) + 次 (times, L) + 见到 (see, V) + 他 (he, P) + 是 (be, J) + { 在 (in, R) + 一 (one, Q) + 个 (Ge, L) + 晚会 (party, N) + 上 (Shang, F)}.

9. $J + C + CS \Longrightarrow JP$
我 (I, P) + 昨天 (yesterday, T) + 没有 (did not, V) + 来 (come, V) + 办公室 (office, N) + 是 (be, J) + 因为 (because, C) + { 家 (home, N) + 里 (Li, F) + 来 (come, V) + 了 (Le, Ht) + 客人 (guest, N)}.

10. J + "不" + J $\Longrightarrow$ JP

{ 是 (be, J) + 不 (not, D) + 是 (be, J)} + 我 (I, P) + 错 (wrong, A) + 了 (Le, M);

11. JP + CS $\Longrightarrow$ CS

(a) 是 (be, J) + 不 (not, D) + 是 (be, J) + { 谁 (who, P) + 把 (ba, R) + 窗户 (window, N) + 打开 (open, V) + 了 (Le, Ht)}?

(b) 是 (be, J) + { 谁 (who, P) + 把 (ba, R) + 窗户 (window, N) + 打开 (open, V) + 了 (Le, Ht)}?

12. JP + CS + "的" $\Longrightarrow$ JP

事情 (matter, N) + 是 (be, J) + { 我 (wo, P) + 告诉 (tell, V) + 他 (he, P)} + 的 (De, H).

3.2.6　以形容词为首的短语规则 (The rules whose left side starts from "A" or "AP")

1. A $\Longrightarrow$ AP

2. AP + VP + AP $\Longrightarrow$ CS

勇敢 (brave, A) + 战胜 (defeat, V) + 了 (Le, H) + 懦弱 (weak, A).

3. AP + VP $\Longrightarrow$ VP

他 (he, P) + {很 (very, D)+ 快 (quick, A)+ 回来 (come back, V) + 了 (Le, H)}.

4. AP + AP $\Longrightarrow$ AP

{ 坚强 (strong, A) + 勇敢 (brave, A)} + 的 (De, H) + 少年 (boy, N);

5. AP + NP $\Longrightarrow$ NP

他 (he, P) + 取得 (gain/win, V) + 了 (Le, H) + { 优异 (excellent, A) + 成绩 (success, N)}.

6. AP + NP^1 + QL $\Longrightarrow$ CS

高 (high, A) + 他 (he, P) / 小王 (Xiaowang, N) + 两 (two, Q) + 公分 (cm, L);

7. AP + QL $\Longrightarrow$ CS

重 (heavy, A) + 三十 (thirty, Q) + 公斤 (kilogram, L).

8. AP + M $\Longrightarrow$ AP

真 (real/indeed, D) + 美 (beautiful, A) + 啊 (oh , M);

9. AP + C(Cwp/Ccw) + AP $\Longrightarrow$ AP

{ 正直 (fair-minded, A) + 和 (and, C) + 善良 (kindhearted, A)} + 是 (be, J) + 她 (she, P) + 的 (De, H) + 美德 (virtue, N).

10. AP + JP + AP $\Longrightarrow$ CS

诚实 (honest, A) + 就 (Jiu, D) + 是 (be, J) + 美 (beautiful, A).

11. AP + "就" + VP + "了" ⟹ S
晚 (late, A) + 了 (Le, H) + 就 (Jiu, D) + 耽误 (hinder, V) + 了 (Le, M).

12. AP + "地" + VP ⟹ VP
{慢 (slow, A) + 慢 (slow, A) + 地 (De, H) + 喝 (drink, V)} + 酒 (wine, N).

13. AP + "的" + NP* ⟹ NP

(a) 著名 (famous, A) + 的 + 作家 (writer, N);

(b) 美丽 (beautiful, A) + 的 (De, H) + 北京 (Beijing, W);

(c) {漂亮 (pretty, A) + 的 (De, H) + 那个 (that, P)} + 是 (be, J) + 演员 (actress, N).

(d) 清爽 (fresh and cool) + 的 (De, H) + 早晨 (morning, T);

14. AP + "的" ⟹ AP
{善良 (good, A) + 的 (De, H)} + {诚实 (honest, A) + 的 (De, H)} + 人们 (people, N);

15. AP + "的" ⟹ PP(Pso)
{高 (high, A) + 的} + 是 (be, J) + 他 (he, P) + 弟弟 (brother, N).

16. AP + "的"+"很" ⟹ AP
高兴 (glad/happy, A) + 的 (De, H) + 很 (very, D);

17. AP + "极"+"了" ⟹ AP
好 (good, A) + 极 (extremely, D) + 了 (Le, M);

18. AP + "异常"/"无比" ⟹ AP
激动 (exciting, A) + 异常 (extremely/exceedingly, D);

19. AP + V(Vtd) ⟹ AP
高兴 (glad, A) + 起来 (Qilai, Vtd);

20. AP ⟹ CS
很 (very, D) + 好 (good, A);

3.2.7 以副词为首的短语规则 (The rules whose left side starts from "D" or "DP")

1. D ⟹ DP

2. DP + DP ⟹ DP
这里 (here, P) + {一共 (total, D) + 只 (only, D)} + 三 (three, Q) + 人 (people, N);

3. DP + VP ⟹ VP
再三 (repeatedly, D) + 要求 (ask, V);

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4. DP + AP ⟹ AP

非常 (very, D) + 好 (good, A);

5. DP + QL ⟹ QL

他 (he, P) + { 才 (just/only, D) + 十六 (sixteen, Q) + 岁 (sui, L)};

6. DP + XP ⟹ XP

他 (he, P) + { 很 (very, D) + 想 (want, X)} + 来 (come, V);

7. DP(Dot) + PP(Pre) ⟹ CS

偏偏 (deliberately, D) + 这样 (such/so, P);

8. DP(Dot) + CS ⟹ CS

还是 (nevertheless, D) + 你 (you, P) + 说 (say, V) + 的 (De, H) + 对 (right, A).

9. DP + JP ⟹ JP

(a) 他 (he, P) + { 不 (not, D) + 是 (be, J)} + 教师 (teacher, N).

(b) 那 (that, P) + 个 (Ge, L)+ 人 (person, N)+ { 曾经 (once, D) + 是 (be, J)}+ 警察 (policeman, N).

10. DP + "的" ⟹ DP

非常 (very, D) + 的 (De, H) + 清楚 (clear, A).

3.2.8 以介词为首的短语规则 (The rules whose left side starts from "R" or "RP")

1. R + NP* ⟹ RP

(a) { 对 (about, R) + 电影 (movie, N)} + 我 (I, P) + 没 (haven't, V) + 兴趣 (interest, N).

(b) { 在 (in, R) + 东京 (Tokyo, W)} + 我 (I, P) + 见 (see, V) + 过 (Guo, H) + 他 (he, P).

(c) 他 (he, P) + 毕业 (graduate, V)+ { 于 (in, R) + 1990(1990, Q) + 年 (year, L)}.

(d) { 让 (about, R) + 他 (he, P)} + 过来.

2. R + VP ⟹ RP

{ 对 (about, R) + 看 (see, V) + 电影 (movie, N)} + 我 (I, P) + 没 (haven't, V) + 兴趣 (interest, N).

3. R + CS ⟹ RP

他 (he, P)+ 这样 (such, P)+ 做 (do, V)+比 (than, R)+ { 你 (you, P)+ 说谎 (tell a lie, V)}+ 好 (good, A).

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4. RP + VP $\Longrightarrow$ CS

   { 把 (ba, R(Roc)) + 苹果 (apple, N)} + 削 (peel, V) + 皮 (skin, N).

5. RP + AP $\Longrightarrow$ CS

   { 对 (to, R) + 他 (he, P)} + 很 (very, D) + 客气 (polite, A).

6. RP + AP + QL $\Longrightarrow$ CS

   { 比 (than, R) + 他 (he, P)} + 小 (little, A) + 三 (three, Q) + 岁 (year, L).

7. RP + CS $\Longrightarrow$ CS

   { 对 (to, R) + 他 (he, P) + 的 (De, H) + 观点 (opinion, N)} + 我 (I, P) + 没有 (don't, V) + 发表 (state, V) + 意见 (opinion, N).

8. "从" + WP + "到" + WP $\Longrightarrow$ RP

   从 (from, R(Rpt)) + 东京 (Tokyo, W) + 到 (to, R(Rpt)) + 京都 (Kyoto, W);

9. "从" + TP + "到" + TP $\Longrightarrow$ RP

   从 (from, R(Rpt)) + 春天 (Spring, T) + 到 (to, R(Rpt)) + 夏天 (summer, T);

10. "在 / 于"+ NP^0 + F $\Longrightarrow$ RP

   (a) 在 (in/at/on, R) + 桥 (bridge, N)+ 上 (Shang, F);

   (b) 在 (in/at/on, R) + { 他 (he, P) + 的 (De, H) + 帮助 (help, N)} + 下 (Xia, F);

11. "在 / 于"+ TP + F $\Longrightarrow$ RP

   在 (in/at/on, R) + 八月 (August, T) + 里 (Li, F);

12. "在 / 于 / 当"+ CS +"时" $\Longrightarrow$ RP

   在 (when, R) + { 我 (I, P) + 遇到 (meet, V) + 他 (he, P)} + 时 (time, T);

13. RP + "的" $\Longrightarrow$ PP(Pso)

   { 在 (in/on, R) + 前面 (front, W) + 的 (De, H)} + 是 (be, J) + 他 (he, P).

14. R + F $\Longrightarrow$ R

   { 向 (towards, R) + 后 (behind/back, F)} + 走 (walk, V).

15. RP $\Longrightarrow$ CS

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[0]In this rule, if "NP" is a specific noun or noun phrase, such as "桌子 (table)", "桥 (bridge)" etc., the reduced result "RP" indicates a specific place. If "NP" is an abstract noun or noun phrase, such as "指导 (guidance)", "帮助 (help)" etc., the "RP" will indicate a special abstract implication.

3.2.9 以数词为首的短语规则 (The rules whose left side starts from "Q", "QP" or "QL")

1. Q $\Longrightarrow$ QP

2. QP + QP $\Longrightarrow$ QP
   一 (one, Q) + 千 (thousand, Q) + 二 (two, Q) + 百 (hundred, Q);

3. QP +C(Cwp / Ccw) + QP $\Longrightarrow$ QP
   { 二 (two, Q) + 和 (and,C) + 四 (four, Q) }+ 都 (all, D)+ 是 (be, J) + 偶数 (even, N).

4. QP + L $\Longrightarrow$ QL
   二 (two, Q) + 百 (hundred, Q) + 克 (gram, L);

5. QP + NP $\Longrightarrow$ NP
   (1) 若干 (several/numbers of, Q)+ 问题 (problem, N); (2) 百万 (hundred thousand, Q)+ 军队 (troops, N);

6. QL + NP $\Longrightarrow$ NP
   五 (five, Q) + 千 (thousand, Q) + 年 (year, L) + 历史 (history, N);

7. QL + F $\Longrightarrow$ WP
   十 (ten, Q) + 米 (meter, L) + 内 (in, F) + 看不见 (can't see, V) + 人 (people, N).

8. QL + F $\Longrightarrow$ TP
   十 (ten, Q) + 年 (year, L) + 里 (Li, F) + 只 (only, D) + 回家 (go home, V) + 一 (one, Q) + 次 (time, L).

9. QP + M $\Longrightarrow$ QP
   二十三 (twenty three, QP) + 了 (Le, M) + 还 (still, D) + 象 (like, J) + 个 (Ge, L) + 孩子 (child, N).

10. QL + M $\Longrightarrow$ QL
    五 (five, Q) + 米 (meter, L) + 了 (Le, M) + 还 (still, D) + 不 (not, D) + 够 (enough, D) + 高 (high, A).

11. Q[L] + "地" $\Longrightarrow$ DP(Dmn)

    (a) 时间 (time, N) + { 一 (one, Q) + 分 (minute, L) + 一 (one, Q) + 秒 (second, L) + 地 (De, H)} + 过去 (past, V) + 了 (Le, Ht);

    (b) { 一 (one, Q) + 个 (Ge, L) + 一 (one, Q) + 个 (Ge, L) + 地 (De, H)} + 说 (say, V);

12. QP + "地" $\Longrightarrow$ DP(Dmn)
    他们 (they, P) + { 三 (three, Q)+ 三 (three, Q) + 两 (two, Q) + 两 (two, Q) + 地 (De, Ht) }+ 走来 (come, V).

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13. Q[L] + AP $\Longrightarrow$ CS

2000(2000, Q)[+ 元 (yuan, L)] + 太 (too, D) + 贵 (expensive, A).

14. QL + JP $\Longrightarrow$ CS

一 (one, Q) + 公斤 (kilogram, L) + 是 (be, J)+ 一千 (one thousand, Q)+ 克 (gram, L).

15. QP + JP $\Longrightarrow$ CS

二 (two, Q) + 是 (be, J) + 偶数 (even, N).

16. QP + VP + CS $\Longrightarrow$ CS

五 (five, Q) + 等于 (be equal to, V) + 三 (three, Q) + 加 (add, V) + 二 (two, Q).

17. QL + C + QL $\Longrightarrow$ QL

一 (one, Q) + 个 (Ge, L) + 或 (or, C) + 两 (two, Q) + 个 (Ge, L);

18. "一"+VP+"就"+VP $\Longrightarrow$ CS

一 (one, Q) + 看见 (see, V) + 他 (he, P) + 就 (Jiu, D) + 想 (want, X) + 笑 (laugh, V).

19. "一"+VP+"就"+AP $\Longrightarrow$ CS

一 (one, Q) + 看见 (see, V) + 他 (he, P) + 就 (Jiu, D) + 紧张 (nervous, A).

20. "一"+VP+ CS $\Longrightarrow$ CS

(a) 一 (one, Q) +{ 看见 (see, V) + 他 (he, P)} + { 我 (I, P) + 想起 (remember, V) + 了 (Le, H)+ 我 (I, P)+ 的 (De, H)+ 一 (one, Q)+ 个 (Ge, L) + 同学 (classmate, N)}.

(b) 一 (one, Q) + { 修 (build, V) + 铁路 (railway, N)} + { 去 (go, V) + 东京 (Tokyo, W) + 方便 (easy, A) + 了 (Le, M)}.

21. QP / QL + "的" $\Longrightarrow$ P(Pso)

{ 800(800, Q)[+ 元 (Yuan, L)] + 的 (De, H)} + 面积 (area, N) + 多大 (how many, P) ?

22. QL + AP $\Longrightarrow$ AP

{ 两 (two, Q) + 米 (meter, L) + 深 (deep, A)} + 的 (De, H) + 河 (river, N);

23. QP $\Longrightarrow$ CS

24. QL $\Longrightarrow$ CS

3.2.10 以量词为首的短语规则 (The rules whose left side starts from "L")

1. L + L $\Longrightarrow$ P(Pso)

(a) { 个 (Ge, L) + 个 (Ge, L)} + 都 (all, D) + 是 (be, V) + 好汉 (good man, N).

(b) { 粒 (Li, L) + 粒 (Li, L)} + 皆 (all, D) + 辛苦 (hardworking, A).

3.2.11 以处所词为首的短语规则 (**The rules whose left side starts from "W" or "WP"**)

1. W $\Longrightarrow$ WP

2. WP + WP $\Longrightarrow$ WP
   广场 (square, W) + 南面 (south part, W);

3. WP + F $\Longrightarrow$ WP
   { 广场 (square, W) + 上 (Shang, F)} + 有 (have/there be, V) + 人 (people, N).

4. WP + C(Cwp/Ccw) + WP $\Longrightarrow$ WP
   京都 (Kyoto, W) + 大阪 (Osaka, W) + 和 (and, C) + 名古屋 (Nagoya, W);

5. WP + WP + AP $\Longrightarrow$ CS
   北京 (Beijing, W)+ 上海 (Shanghai, W)+ 一样 (same, A)+ 美 (beautiful, A).

6. WP + QL $\Longrightarrow$ WP
   { 北京 (Beijing, W) + 上海 (Shanghai, W) + 两 (two, Q) + 地 (place, N)} + 同时 (at the same time, D) + 集会 (held meeting, V).

7. WP $\Longrightarrow$ NP*

8. WP $\Longrightarrow$ CS

9. WP + "的" + AP $\Longrightarrow$ AP
   东京 (Tokyo, W)+ 的 (De, H) + 热 (hot, A) + 不 (not, D) + 同 (same, A) + 于 (with, R) + 北京 (Beijing, W).

10. WP + "的" + VP $\Longrightarrow$ VP
    老城区 (The district of old city, W) + 的 (De, H) + 重建 (rebuild, V) + 破坏 (destroy, V) + 了 (Le, H) + 很 (very) + 多 (much/many, A) + 古迹 (historic site, N).

3.2.12 以代词为首的短语规则 (**The rules whose left side starts from "P" or "PP"**)

1. P $\Longrightarrow$ PP

2. PP + "的" $\Longrightarrow$ PP(Pso)

   (a) 这 (this, P) + 钢笔 (pen, N) + 是 (be, J) + { 我 (I, P) + 的 (De, H)}.

   (b) 那 (that, P) + 本 (Ben, L) + 书 (book, N) + 不 (not, D) + 是 (be, J) +{ 这样 (such/so, P) + 的 (De, H) }.

3. PP(Pso) + QL $\Longrightarrow$ PP(Pso)
   { 我们 (we, P) + 五 (five, Q) + 个 (Ge, L)} + 一块儿 (together, D) + 走 (walk, V).

4. PP(Pso) + NP ⟹ NP

    (a) {计算机 (computer, N) + 的 (De, H)} + 键盘 (keyboard, N);

    (b) 我们 (we, P) + 工人 (worker, N);

5. PP(Pso) + NP + PP(Pso) ⟹ NP
我们 (we, P) + 工人 (worker, N) + 自己 (oneself, P);

6. PP + L ⟹ PP(Pso)

    (a) {这 (this, P) + 个 (Ge, L)} + 月 (month, L);

    (b) {哪 (which, P) + 天 (day, L)} + 去 (go, V) + 那里 (there, P)?

7. PP(Pso) + PP(Pso) ⟹ PP(Pso)
{我 (I, P) + 自己 (myself, P)} + 去 (go, V) + 大阪 (Osaka, W).

8. PP(Pre) + PP(Pre) ⟹ PP(Pre)
为什么 (why, P(Pre)) + 这样 (so/such, P(Pre));

9. PP(Pso) + TP ⟹ TP
{这 (this, P(Pso))[个 (Ge, L)] + 星期天 (Sunday, T)} + 我 (I, P) + 要 (want, X) + 看 (read, V) + 书 (book, N).

10. PP(Pso) + WP ⟹ WP
我们 (we, P) + 北京 (Beijing, W);

11. PP(Pre) + JP ⟹ CS
这样 (such, P) + 是 (be, J) + 对 (right, A) + 的 (De, H).

12. PP(Pre) + VP ⟹ VP
{怎么 (how, P) + 处理 (process, V)} + 这 (this, P) + 个 (Ge, L) + 问题 (problem, N)?

13. PP(Pso) + RP + VP ⟹ CS
他 (he, P) + {向 (from, R) + 我 (I, P)} + 借 (borrow, V) + 书 (book, N).

14. PP + RP + AP ⟹ CS
这样 (such, P) + {比 (than, R) + 那样 (that, P)} + 好 (good, A).

15. PP + "的" + AP ⟹ AP

    (a) {他 (he, P) + 的 (De, H) + 敏捷 (smart, A)} + 使 (make, R) + 人 (people, N) + 吃惊 (surprised, A).

    (b) {这样 (so, P(Pre)) + 的 (De, H) + 敏捷 (smart, A)} + 使 (make, R) + 人 (people, N) + 吃惊 (surprised, A).

16. PP(Pre) + AP $\Longrightarrow$ AP

{这样 (so, P)+ 迅速 (quick, A)} +简直 (simply, D)+ 使 (make, R)+ 人 (people, N) + 吃惊 (surprised, A).

17. PP(Pso) $\Longrightarrow$ NP*

18. PP(Pso) $\Longrightarrow$ NP^1

19. PP $\Longrightarrow$ CS

3.2.13 以时间词为首的短语规则 (The rules whose left side starts from "T" or "TP")

1. T $\Longrightarrow$ TP

2. TP + TP $\Longrightarrow$ TP

今年 (this year, T) + 春天 (Spring, T);

3. TP +C(Cwp / Ccw) + TP $\Longrightarrow$ TP

昨天 (yesterday, T) + 和 (and,C) + 今天 (today, T);

4. TP + TP $\Longrightarrow$ CS

今天 (today, T) + 星期五 (Friday, T).

5. TP + QL $\Longrightarrow$ TP

{春 (Spring, T) + 秋 (autumn, T) + 两 (two, Q) + 季 (season, N)} + 天气 (the weather, N) + 好 (good, A).

6. TP + F $\Longrightarrow$ TP

{星期天 (Sunday, T) + 里 (Li, F)} + 你 (you, P) + 干 (do, V) + 什么 (what, P) ?

7. TP + CS $\Longrightarrow$ CS

(a) 星期天 (Sunday, T) + {你 (you, P) + 想 (want, X) + 干 (do, V) + 什么 (what, P)}?

(b) 星期天 (Sunday, T) + 在 (in, R)+ 会议室 (meeting room, N)+ 开会 (hold meeting, V).

8. TP $\Longrightarrow$ NP*

9. TP $\Longrightarrow$ CS

3.2.14 以方位词为首的短语规则 (The rules whose left side starts from "F" or "FP")

1. F + F $\Longrightarrow$ FP

{左 (left, F) + 右 (right, F)} + 看 (see, V) + 看 (see, V);

2. FP + AP $\Longrightarrow$ CS

左 (left, F) + 右 (right, F) + 一样 (same, A);

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3. FP + VP ⟹ CS

前 (front, F) + 后 (back, F) + 看 (see, V) + 看 (see, V);

4. FP + JP ⟹ CS

左 (left, F) + 右 (right, F) + 都 (all, D) + 是 (be, J);

3.2.15 以拟声词为首的短语规则 (The rules whose left side starts from "Y" or "YP")

1. Y ⟹ YP

2. Y + Y ⟹ YP

砰 (Peng, Y) + 砰 (Peng, Y) + 地 (De, H) + 跳 (jump, V);

3. YP + "地" + VP ⟹ VP

哗啦 (Huala, Y) + 哗啦 (Huala, Y) + 地 (De, H) + 流 (flow, V) + 水 (water, N);

4. YP + "的" + NP ⟹ NP

哗啦 (Huala, Y) + 哗啦 (Huala, Y) + 的 (De, H) + 声音 (sound, N);

5. YP + QL ⟹ QL

哗啦 (Huala, Y) + 哗啦 (Huala, Y) + 两 (two, Q) + 声 (sound, L);

6. Y+"的"+"一声／一下"⟹DP(Dmn)

砰 (Peng, Y) + 的 (De, H) + 一 (one, Q) + 声 (sound, L);

7. YP + VP ⟹ VP

咯咯 (Gege, Y) + 笑 (laugh/smile) + 个 (Ge, L) + 不 (not, D) + 停 (stop, V);

8. YP ⟹ CS

{噌 (Ceng, Y), 噌 (Ceng, Y), 噌 (Ceng, Y)}, 他 (he, P) + 跳 (jump, V) + 过去 (go, V);

3.2.16 以惯用语词为首的短语规则 (The rules whose left side starts from "I")

1. I ⟹ CS

3.2.17 与子句相关的规则 (The rules that involve "CS")

1. CS + CS ⟹ S

他 (he, P) + 去 (go, V) + 东京 (Tokyo, W), 我 (I, P) + 去 (go, V) + 大阪 (Osaka, W).

2. CS +C(Ccs/Ccw) + CS ⟹ S

我 (I, P) + 不 (not, D) + 会 (can, X) + 讲 (speak, V) + 日语 (Japanese language, N),
但是 (but, C) + 认识 (know, V) + 一些 (some, P) + 日语 (Japanese, N) + 单词 (word, N).

3. C(Ccs/Ccw) + CS ⟹ CS

(a) 你 (you, P) + 不 (not, D) + 能 (can, X) + 去 (go, V), 尽管 (C(Ccs)) + 你 (you, P) + 已经 (already, D) + 来 (come, V) + 了 (Le, H).

(b) 如果 (if, C) + 你 (you, P) + 说 (say, V) + 的 (De, H) + 对 (right, A), 我们 (we, P) + 会 (can, X) + 考虑 (consider, V) + 你 (you, P) + 的 (De, H) + 建议 (suggestion, N).

(c) 不但 (not only, C) + 他 (he, P) + 说 (say, V) + 了 (Le, H), 而且 (but also, C) + 他 (he, P) + 做 (do, V) + 了 (Le, H).

4. CS + VP ⟹ CS

{他 (he, P) + 赤脚 (barefoot, A) + 走路 (walk, V)} + 磨 (rub, V) + 破 (worn out, A) + 了 (Le, Ht) + 脚 (foot, N).

5. CS+JP⟹CS

{他 (he, P) + 没有 (did not, V) + 去 (go, V) + 打猎 (go hunting, V)} + 是 (be, J) + 对 (right, A) + 的 (De, H).

6. CS+RP+VP⟹CS

{他 (he, P) + 赤脚 (barefoot, A) + 走路 (walk, V)} + 把 (ba, R) + 脚 (foot, N) + 磨 (rub, V) + 破 (worn out, A) + 了 (Le, Ht).

7. CS + AP ⟹ S

{他 (he, P) + 赤脚 (barefoot, A) + 走路 (walk, V)} + 很 (very, D) + 累 (tired, A).

8. CS + P(Pre) ⟹ S

{我们 (we, P) + 今晚 (this evening, T) + 去 (go, V) + 喝酒 (drink, V)} + 怎么样 (how about, P) ?

9. CS + QL ⟹ S

{他 (he, P) + 生活 (live, V) + 在 (in, R) + 日本 (Japan, W)} + 已经 (already, D) + 十 (ten, Q) + 年 (year, L) + 了 (Le, M).

10. CS + VP + CS ⟹ S

{论文 (paper, N) + 发表 (publish, V) + 了 (Le, H)} + 证明 (prove, V) + {他 (he, P) + 是 (be, J) + 有 (have, V) + 水平 (level, N) + 的 (De, H)}.

11. CS + RP + AP ⟹ S

{他 (he, P) + 坐 (take, V) + 火车 (train, N) + 去 (go, V) + 东京 (Tokyo, W)} + 比 (than, R) + {我们 (we, P) + 坐 (take, V) + 飞机 (airplane, N) + 去 (go, V) + 东京 (Tokyo, W)} + 快 (fast, A).

12. CS+"的" ⟹ P(Pso)

{明天 (tomorrow, T) + 我们 (we, P) + 去 (go, V) + 东京 (Tokyo, W)} + 的 (De, H) + 计划 (plan, N) + 取消 (cancel, V) + 了 (Le, Ht).

13. CS + M $\Longrightarrow$ S

{他 (he, P)+ 说 (say, V) + 的 (De, H) + 是 (be, J) + 多么 (how, D) + 正确 (right, A)} + 啊 (oh, M)!

14. CS + F $\Longrightarrow$ TP

{他 (he, P) + 来 (come, V) + 这里 (here, P)} + 前 (before, F) + 我们 (we, P) + 必须 (must, D) + 赶到 (arrive, V).

15. CS $\Longrightarrow$ S

3.3 Explanatory Notes to the Parsing Rules

1. The priority to use rules listed above is defined as follows:

   (a) The specific rules are prior to general rules;

   (b) The rules whose left side is longer are prior to those whose left side is shorter.

2. The parsing rules listed above only reflect most of the Chinese language phenomena, and the rule set remains to be expanded or modified.

4 Acknowledgments

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