



ManGO: Mandarin Grammar Online

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Delph-in Summit, Seattle
June 2011





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Overview

- **Matrix-based Mandarin Chinese Grammar**
- **Partial coverage of (but not limited to) MRS test suite: 81.3% so far**
- **Coverage of various Mandarin-specific phenomena**



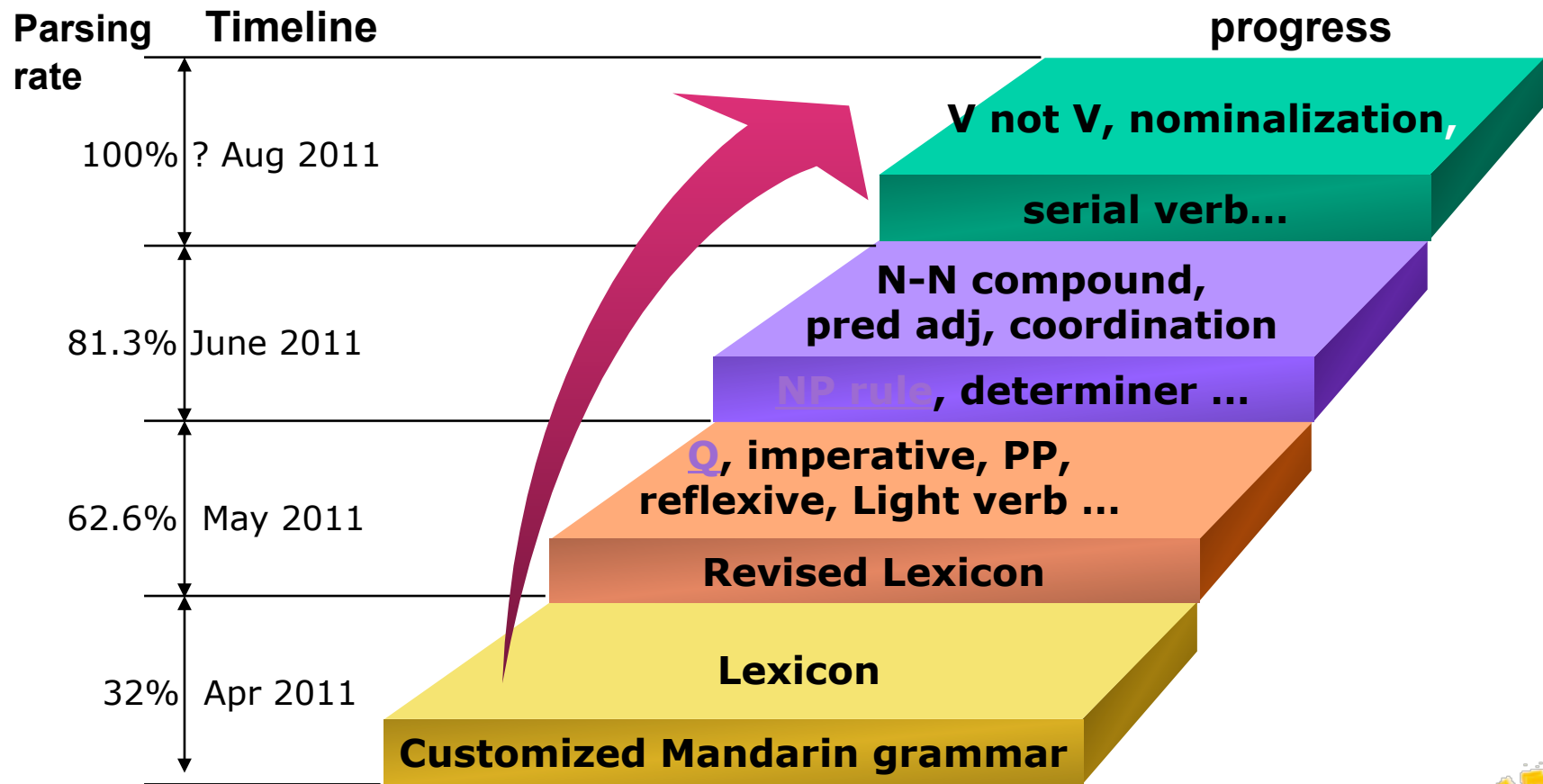


Coverage (till 17 June 2011)

Aggregate	total items #	positive items #	word string \emptyset	lexical items \emptyset	distinct analyses \emptyset	total results #	overall coverage %
i-length in [10 .. 15]	2	2	10.50	12.50	3.50	2	100.0
i-length in [5 .. 10]	66	66	6.14	7.53	3.29	49	74.2
i-length in [0 .. 5]	39	39	3.51	4.23	1.61	36	92.3
Total	107	107	5.26	6.42	2.60	87	81.3



Progress Report





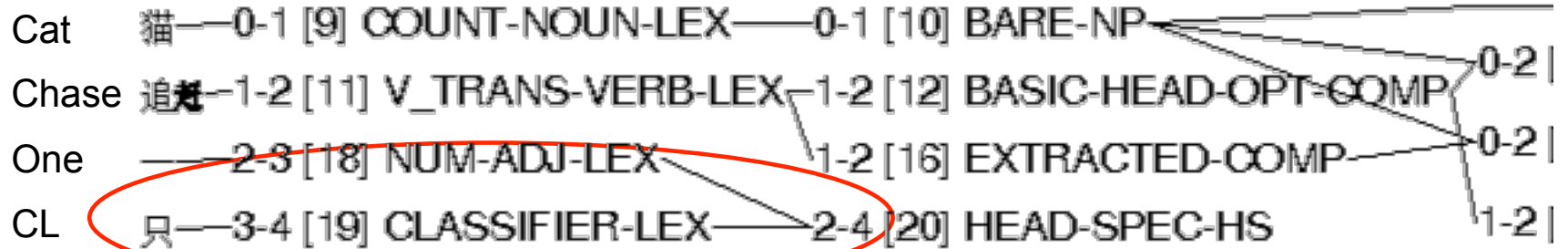
NP Rules: intro. (1)

猫 追赶 一 只

Mao1 zhui1-gan3 yi1 zhi1

Cat chase one CL

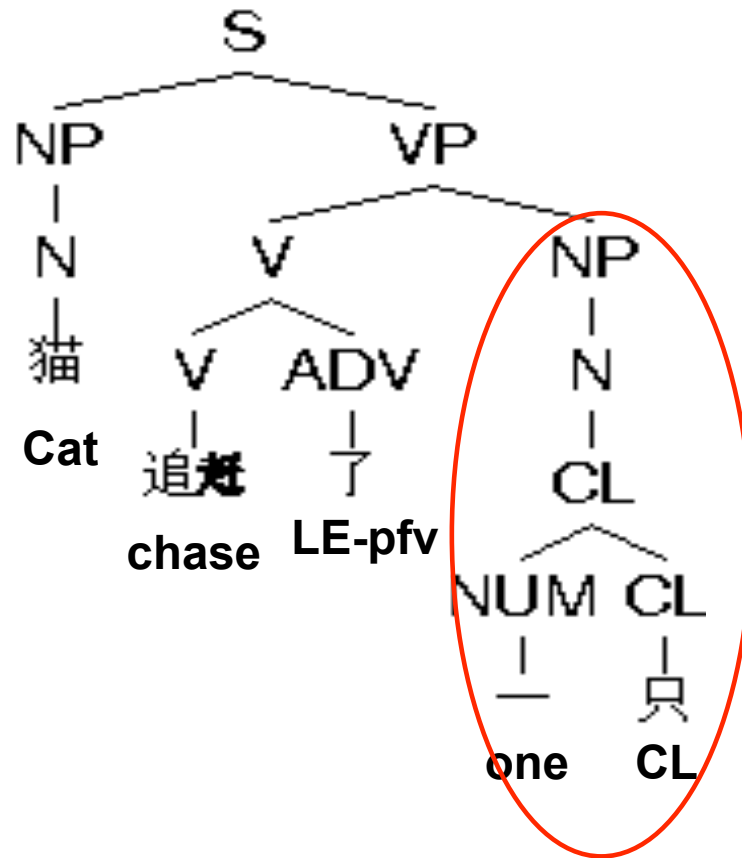
“The cat chases one.”



NP Rule: **Num + CL → NP**



NP Rules: intro. (2)

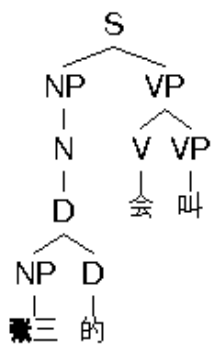




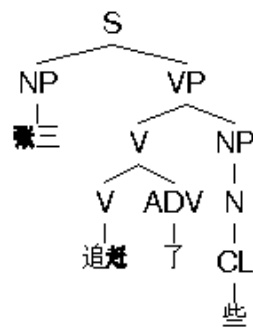
NP Rules: extension

Other NP rules in Chinese:

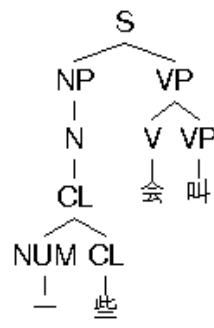
- $N(P) + GEN \rightarrow NP$ (see A)
- $Q \rightarrow NP$ (see B)
- $Num / Demon + Q \rightarrow NP$ (see C&D)
- $Num / Demon + CL \rightarrow NP$ (see E&F)



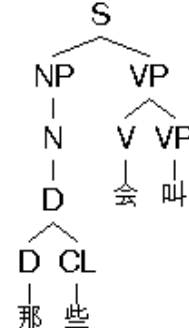
A



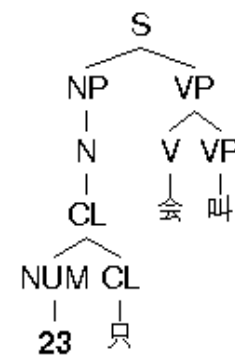
B



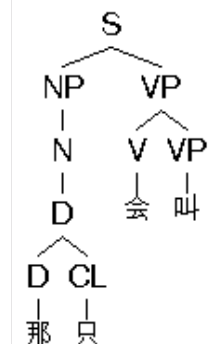
C



D



E



F





Quantifiers (1)

- We defined a unary NP rule: $Q \rightarrow NP$; Moreover, Qs in Mandarin do not appear in a subject position. To describe this, we attach a bool feature [NONSUBJ] to Qs, which can be propagated to its mother. For example:

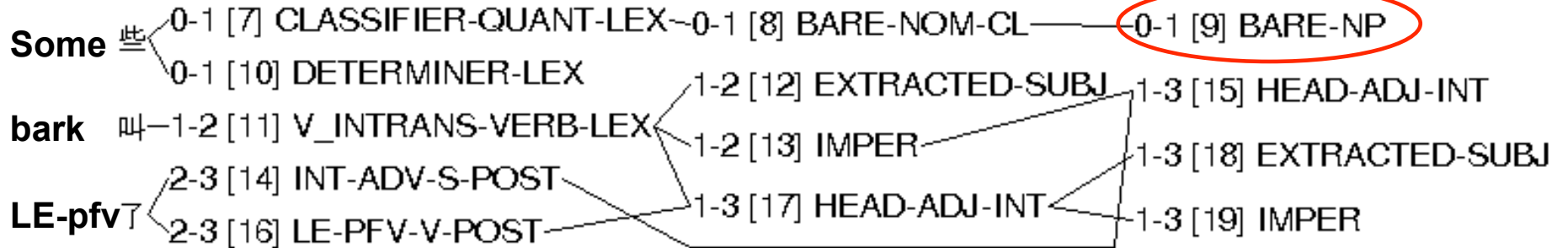
*些 叫 了

xie1 jiao4 le

some bark LE-pfv



Quantifiers (2)



Feature structure of 0-1[9]

[bare-np-phrase
 STEM: [cons
 FIRST: 些
 REST: null]
 KEY-ARG: bool
 SYNSEM: [canonical-synsem
 OPT: bool
 OPT-CS: cog-st
 LOCAL: [local-min
 CAT: [cat
 HEAD: noun;
 VAL: valence;
 MC: luk
 HC-LIGHT: luk
 POSTHEAD: bool
 NONSUBJ: +]





To be tackled (1)

- Nominalization
 - DE-phrase

- V not V
 - NP-heaviness constraint
 - Different behaviors of subtypes
 - Content verb
 - Linking verb *shi* (be)



To be tackled (2)

- Serial verb construction
 - Numerous subtypes
 - Sense-based instead of word-based
 - Free distribution of tense and aspect markers
 - Sensitive to pragmatic factors
 - Verb classification
 - Lack of grammatical device to indicate verbal relation between verbs in Chinese: e.g. infinitive “to”, inflexive “-ing”, conjunction etc.
-



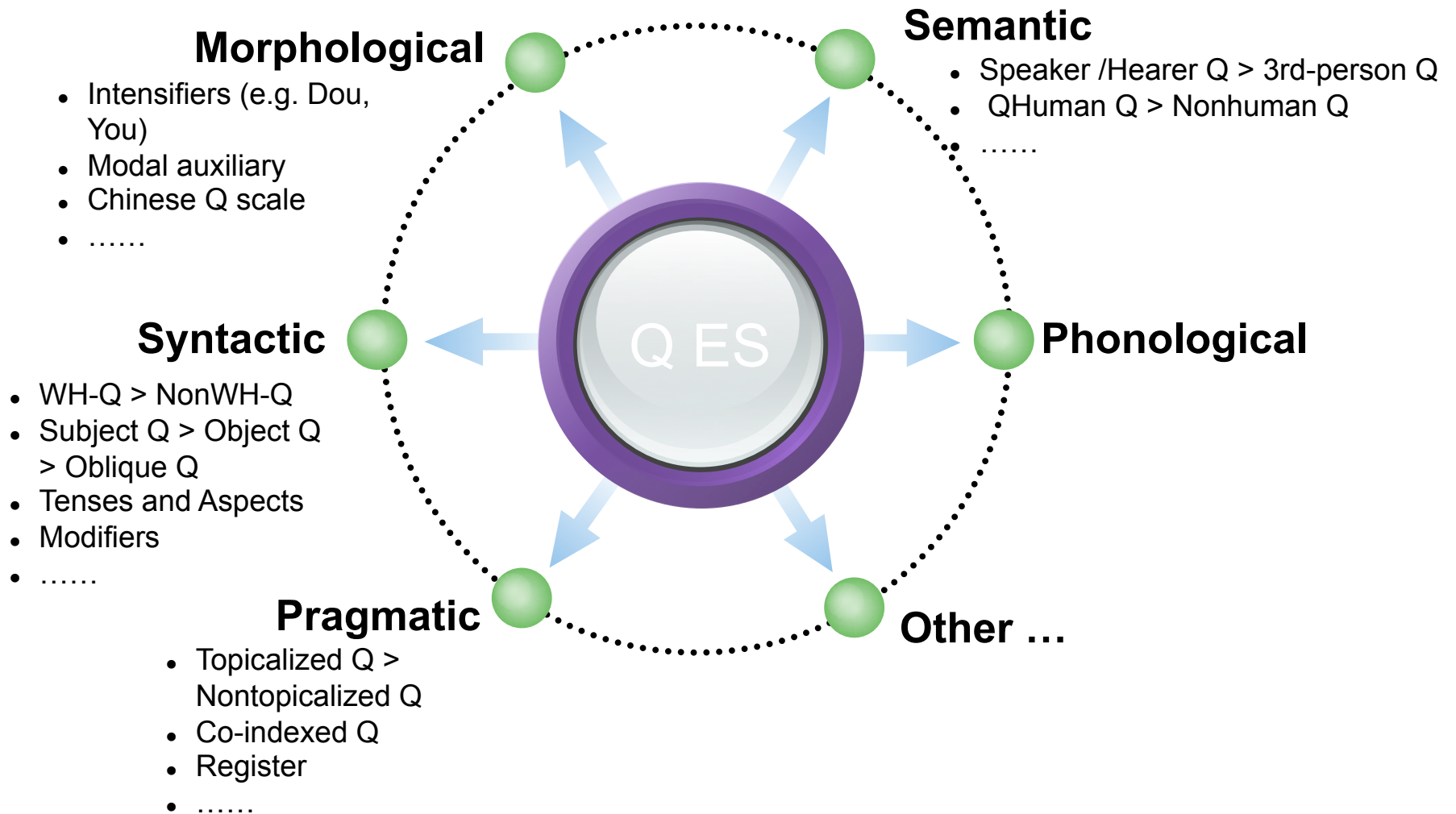


Quantifier Expert System (Q ES) (1)

- Ideas originate from Kuno, S., Takami, K., & Wu, Y. (1999) which adopts an expert system to describe quantifier scope
- We incorporated many more Chinese experts to better describe and predict the definiteness and pragmatic interpretations of Chinese quantifiers



Quantifier Expert System (1)





Quantifier Expert System (2)

- Rationale: combined descriptive and explanatory force of different linguistic levels is stronger
- Experts are computational-oriented
- Efficiency of this system: statistically supported in Yang (2004 & 2011)
- Future concern: appropriately install this system in HPSG and its implementation



An example (1)

每一只猫都追赶花园里的一只会叫
的老狗

Mei3 yi1 zhi1 mao1 dou1 zhui1gan3 hua1yuan2
li3 de yi1 zhi1 hui4 jiao4 de lao3 gou3

Every one CL cat all chase garden in DE one CL
can bark DE old dog

Every cat chases an old dog in the garden who
can bark.

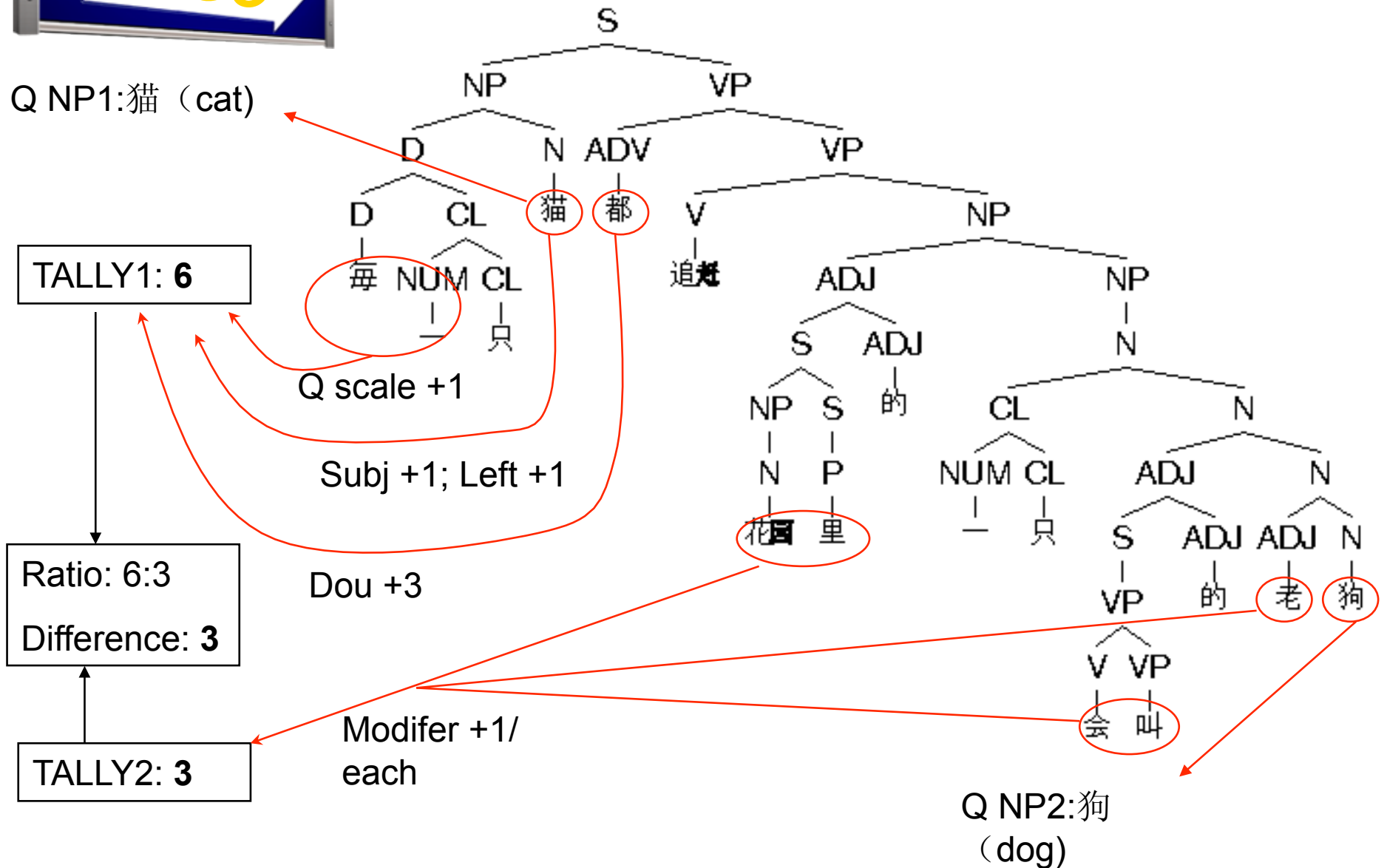


An example (2)

- Quantified NP (Q NP): 猫 (cat) and 狗 (dog)
- Vote: a score attached to an expert of a Q NP
- Tally: the total score of all experts of a Q NP which tells the definiteness and pragmatic interpretation of a Q NP
- Ratio: ratio between the tallies of Q NP indicates the ambiguity of a quantified sentence



An example (3)





Thank You !

