Exclusive (dis)harmonies in Chinese
Mingming Liu (Rutgers University)

***Dou* (dis)harmony:** Chen (2005) notices that the distributive operator *dou* (Lin 1998) in Chinese is compatible with quantifiers describing large quantities (such as *henduo*'many') but not with quantifiers describing small quantities (such as *henshao*'few'). She terms this *dou*-(dis)harmony.

(1) *Zuotian juhui, henduo / *henshao ren **dou** lai le.*   ***dou*-(dis)harmony**
yesterday party, many / *few   people DOU come ASP
Yesterday, many / *few people came to the party.

Chen offers an explanation of *dou*-(dis)harmony involving a context-dependent expected value s_c. Specifically, *dou* carries a presupposition that the number of 'NPs' (*people* in (1)) that 'VP' (*came to the party* in (1)) falls above the expected value s_c. Since "*few* NP VP" is true iff the number of 'NPs' that 'VP' falls below s_c (Partee 1988), contradicting the high-rank presupposition of *dou*, *dou* is incompatible with *few*. In a parallel manner, the compatibility of *dou* and *many* is explained by taking "*many* NP VP" to be true iff the number of 'NPs' that 'VP' falls above s_c.

Exclusive (dis)harmony-A: Chinese exclusive particles (*jiu, zhi(you)* 'only') exhibit the opposite pattern: they are compatible with quantifiers denoting small quantities such as *few* but not with those denoting large quantities such as *many* (see (2)).

(2) *Zuotian juhui, **jiu** /**zhi** *henduo / henshao ren lai.*   **Exclusive-(dis)harmony-A**
yesterday party, only /only *many / few   people come
Yesterday, only *many / few people came to the party.

An analysis based on Chen (2005) is possible for Exclusive (dis)harmony-A. All we have to assume is that Chinese exclusives carry a low-rank presupposition that its 'NP'-associate that 'VP' falls below the expected value s_c. This is the *mirative particle* analysis of English *only* as in Zeevat (2008), where the core meaning of *only* is 'less than expected'.

Exclusive (dis)harmony-B: We further discover Exclusive (dis)harmony-B: Chinese exclusives are compatible with modified numeral *budao n* "less-than *n*" but not *chaoguo n* "more-than *n*".

(3) ***jiu** /**zhi(you)** *chaoguo / budao shi ge ren lai.*   **Exclusive-(dis)harmony-B**
only /only   *more-than / less-than 10 CL people come
Only *more than / less than 10_F people came to the party.

Exclusive (dis)harmony-B cannot be explained by Chen's (2005) analysis which crucially relies on the expected value s_c; this is because the standard semantics (Hackl 2001, Nouwen 2010) of modified numerals such as *more/less-than n* does not involve a context-dependent s_c.

(4) $[\![\text{more than } m]\!] = \lambda M.\max_n(M(n)) > m$
$[\![\text{less than } m]\!] = \lambda M.\max_n(M(n)) < m$ Nouwen (2010:(13))

Explaining exclusives' incompatibility with *more than n*: Based on their Universal Density of Measurement (UDM), Fox and Hackl (2006) provides an analysis for *only*'s incompatibility with *more than n*, which we adopt to explain half of our (dis)harmony-B puzzle. Basically, **only more than 10_F people came* presupposes (a): more than 10 people came, and asserts (b): it's not the case that more than *n* people came, with $n > 10$. Further, (a) entails (c): there were $10 + \varepsilon$ people coming, and because of UDM, $10 + \varepsilon/2$ people is also under consideration. Now, according to (c), that more than $10 + \varepsilon/2$ people came is true, but according to (b) it is false (since $10 + \varepsilon/2 > 10$). Thus, a contradiction follows and the incompatibility is explained.

Problem with *less than n*: It turns out that Fox and Hackl (2006) predict exclusives are equally bad with *less than n*, thus failing to explain their compatibility in Chinese. Readers can verify the prediction by

applying the above reasoning with *more* changed into *less*, $>$ into $<$ and + into -.

Explaining the puzzle: The above problem of *only* with *less than n* results from the application of the exclusive component of *only* to stronger alternative propositions as in{less than 9 people came, less than 8 people came, ...}. Thus, we suggest that the solution to the problem is to prevent the exclusive component from applying to the above set. Meanwhile, to explain the incompatibility of *only* with *more than n*, we need the exclusive component of *only* to apply to stronger alternatives as in{more than 11 people came, more than 12 people came,...}. It seems paradoxical to require the exclusive component of *only* to be applied to stronger alternatives in one case but not in the other. But we propose that we can achieve this by restricting the domain of quantification *C* of *only*.

(5) **Restricted Alt:** exclusives such as *jiu, zhi(you)* 'only' (by presupposition) restricts Alt($[\![Focus]\!]$) to an (ordered) subset Alt$_{R+}$($[\![Focus]\!]$) of which the focus value is the bottom:
$\forall x \in$ Alt($[\![Focus]\!]$)$[x \neq [\![Focus]\!] \to [\![Focus]\!] <_R x]$ Presupposition

(6) **Exclusive Assertion:** *only p* asserts that propositions in *C* that are not entailed by *p* are negated:
$[\![jiu/zhi(you)\ p]\!] = \lambda w \forall q \in C[q(w) \to (q \Rightarrow p)]$

(7) **Alt$_{R+}$($[\![Focus]\!]$) determines *C*:** $C \subseteq \{q \mid \exists x.(x \in Alt_{R+}([\![Focus]\!]) \wedge p = ([\![Background]\!](x)))\}$

(6) is the standard analysis of *only*, and (7) illustrate the idea that the set of alternative propositions is (partially) determined by the set of focus alternatives (Rooth 1992). Finally, (5) is similar to Krifka's (2000) treatment of German *already/still*; there, Krifka restricts the focus alternatives associated with *already/still* to a subset consisting of only alternatives ranking ealier/later than the semantic value of the focus w.r.t a temporal order.

(5), (6) and (7) together explains the Exclusive (dis)harmony-B. The essence is that Restrict Alt restricts the domain of quantification *C* in such a way that for *less than n* cases, *C* only contains propositions that are entailed by the prejacent, thus escaping the exclusive assertion of *only*.

(8) *jiu/zhi* less than 10$_F$ people came.
Restricted Alt: $10 < 11 < 12 < ...$
C: {less than 10 people came, less than 11 people came,...}
Exclusive Assertion: applies vacuously

(9) **jiu/zhi* more than 10$_F$ people came.
Restricted Alt: $10 < 11 < 12 < ...$
C: {more than 10 people came, more than 11 people came,...}
Exclusive Assertion: it's not the case that more than 10 people came, & it's not the case that more than 11 people came, &...

Exclusive (dis)harmony-A revisted: Remember that based on Chen (2005), exclusive (dis)harmony-A is explained by taking exclusives to carry a low-rank presupposition that the 'focus' falls below the expected value s_c. This can also be captured in the current analysis. All we need to require is that the expected value s_c should always be included in the restricted alternative set Alt$_{R+}$ associated with the exclusives. Then, since the focus is the bottom of Alt$_{R+}$, the focus value $< s_c$.

Conclusion: We have noticed two types of exclusive (dis)harmony in Chinese, and we have explained the phenomena by positing a scalar presuppositon for *jiu/zhi* which restricts the set of alternatives that *jiu/zhi* operates on. In the talk, we will further compare our analysis with a recent account of similar data in English, as in Alxatib (2013); Chinese data are shown to be more compatible with our proposal.

Selected References: Alxatib (2013) "*Only* and association with negative antonyms", MIT thesis. Chen (2005) "dou (dis)harmony", NELS. Fox and Hackl (2006) " The universal density of measurement", L&P. Krifka (2000) "Alternatives for aspectual particles: Semantics of *still* and *already*", BLS. Partee (1988) "Many Quantifiers", ESCOL. Zeevat (2008) "*Only* as a mirative particle", Working Papers of SFB 732.