Post-verbal non-referential NPs in Mandarin: A case of Pseudo-Incorporation

Introduction: Different from English, Mandarin allows non-referential bare NP arguments not involving any functional projections or plural marking. In the presence of an adverbial duration phrase (DrP), post-verbal bare NPs are limited to the lowest position, i.e. to the right of the DrP (Huang, Li, & Li, 2009; Li, 2013; Liao, 2013, a.o.). DPs (e.g. Dem(onstrative)Ps, Num(eral)Ps, Cl(assifier)Ps, etc.), on the other hand, are required to be in a position higher than the DrP:

(1) a. Zhangsan mai-le san nian **che**
Zhangsan sell-ASP three year car
'Zhangsan sold cars for three years.'

b. *Zhangsan mai-le **che** san nian
Zhangsan sell-ASP car three year
'Zhangsan sold cars for three years.'

(2) a. Lisi nian-le **zhe yi-ben shu** san tian
Lisi read-ASP this one-CL book three day
'Lisi read this book for three days.'

b. *Lisi nian-le san tian **zhe yi-ben shu**
Lisi read-ASP three days this one-CL book
'Lisi read this book for three days.'

Huang, Li, and Li (2009) propose a Mandarin VP structure where the direct object of transitive verbs can compose either as the complement of V or in Spec.VP, and the DrP left-adjoins to V'. To derive the contrast in (1), they posit a constraint on the composition of non-referential NPs:

(3) A non-referential constituent which bears a theta-relation with a head H should be combined with H to form the smallest possible constituent. (Huang, Li, and Li, 2009: 95)

However, the cause of (3) is unclear, and (3) remains agnostic about the occurrence of DPs, allowing for the ungrammatical ordering possibility in (2b). By showing that Mandarin bare NPs are a case of pseudo-incorporation, I will propose an argument structure that can explain the ordering pattern in (1) and (2), as well as language variation in allowing pseudo-incorporated NPs, aiming to unify the accounts of pseudo-incorporation from a pure syntactic point of view.

Characteristics of Pseudo-Incorporation (P-I): According to Dayal (2011, 2015), in Hindi, pseudo-incorporated NPs (P-I NPs) are non-Case-marked and can only occur in the object position. They show the following properties which Mandarin bare NPs also show.

I. Number neutrality: P-I NPs are number neutral (aspect-dependent in Hindi & Mandarin):

(4) a. Lisi mai-le *yi tian* che [*Atelic*]
Lisi sell-ASP one day car
'Lisi sold (one or more) cars for a day.'

b. Lisi *zai yi tian nei* mai-chu-le che [*Telic*]
Lisi at one day in sell-out-ASP car
'Lisi sold out a car (exactly one) in a day.'

II. Obligatory narrow scope: P-I NPs obligatorily take narrow scope.

(5) Lisi **bixu**/**meiyou** mai san nian **che**
Lisi must/not sell three year car
✔'Lisi must/did not sell cars for three years.' (□ > ∃; ¬ > ∃)
'There some cars such that Lisi must/did not sell them for three years.' (∃ > □; *∃ > ¬)

III. Inability of discourse anaphora: P-I NPs cannot antecede a discourse anaphor.

(6) a. Zhangsan bu-le san nian yu
Zhangsan catch-ASP three year fish
'Zhangsan fished for three years.'

b. #Ta/Tamen mai-le hen hao-de jiaqian
It/They sell-ASP very good price
#'It/They sold for a very good price.'

Analysis: Given Lin (2001) and Williams' (2005, 2008) observation that thematic relations in Mandarin are flexible, which leads to their conclusion that Mandarin arguments are introduced syntactically, I encode the internal theta-roles in a syntactic head Θ^0 that immediately dominates the VP, similar to *v* (Kratzer, 1996): (7) $[_{\Theta P}\ [_{\Theta_2'}\ [_{DrP}\ \textit{t-time}]\ [_{\Theta_1'}\ \Theta\ [_{VP}\ [_{V'}\ V\ NP]]]]]$.

(i) Verbs only denote eventualities: $[\![V]\!] = \lambda e\ .\ V(e)$. (V *is assumed to undergo movement to v*)

(ii) Non-referential bare NPs are arguments of property-type: $[\![NP]\!] = \lambda x \lambda e\ .\ NP(x, e)$.

(iii) Θ^0 probes down the structure and agrees with V to pick out the relevant θ-role specified in the event denoted by V: $[\![\Theta]\!] = \lambda x \lambda e\ .\ \theta(x, e)$ (θ being a variable for θ-roles).

(iv) NPs compose with the V via Event Identification (Kratzer, 1996) and modify the event by restricting the properties of its internal arguments: $[\![VP]\!] = \lambda x \lambda e\ .\ V(e) \wedge NP(x, e)$.

(v) A slightly modified version of Predicate Modification that conjoins two "eventized" relations

applies to compose Θ^0 and VP: $[\![\Theta_1']\!] = \lambda x \lambda e\ .\ V(e) \wedge NP(x, e) \wedge \theta(x, e)$.

(vi) The open argument position of Θ_1' is existentially closed (Diesing, 1990, 1992) and Θ_1' is temporally modified by the DrP: $[\![DrP]\!] = \lambda Q \lambda e\ [Q(e) \wedge \tau(e) = \textit{t-time}]$;

$[\![\Theta P]\!] = \lambda e \exists x\ [V(e) \wedge NP(x, e) \wedge \theta(x, e) \wedge \tau(e) = \textit{t-time}]$.

Consequences: The current theory assumes widely acknowledged modes of semantic composition (e.g. Event Identification, Predicate Modification, Function Application) and proposes a more elaborate syntax that regulates the positions of arguments based on semantic types. The DrP adjunct disambiguates the composition sites of NPs and DPs, and (3) is thus explained:

(8) $[_{vP}\ [_{DP}$ ZS$]\ [_{v'}\ v\ [_{\Theta P}\ [_{\Theta'}\ [_{DrP}$ san nian$]\ [_{\Theta'}\ \exists\ [_{\Theta'}\ \Theta\ [_{VP}\ [_{V'}$ mai-le $[_{NP}$ che$]]]]]]]]]$ (=(1a))

$[\![(1a)]\!] = \lambda e \exists x\ [\textit{sell}(e) \wedge \textit{car}(x, e) \wedge \text{Theme}(x, e) \wedge \tau(e) = \textit{three-years} \wedge \text{Agent}(ZS, e)]$

Argument-type DPs cannot compose in the complement of V due to type mismatch but can only compose in Spec.ΘP. We then derive the pattern in (2):

(9) $[_{vP}\ [_{DP}$ ZS$]\ [_{v'}\ v\ [_{\Theta P}\ [_{DP}$ zhe yi-ben shu$]\ [_{\Theta'}\ \Theta\ [_{VP}\ [_{V'}\ [_{DrP}$ san tian$]\ [_{V'}$ nian-le$]]]]]]]$ (=(2a))

$[\![(2a)]\!] = \lambda e \iota x\ [\textit{read}(e) \wedge \text{Th}(x, e) \wedge \textit{book}(x, e) \wedge \text{Card}(x) = 1 \wedge \tau(e) = \textit{three-days} \wedge \text{Ag}(ZS, e)]$

In order to block (1b) (i.e. property NPs composing at Spec.ΘP) and account for the Mandarin-English difference in argument composition, two hypotheses are made. **Hypothesis 1:** Languages differ in lexicalizing either the V root (Mandarin) or Θ' (V + Θ^0; English) as verbs. Below Θ' is treated either as word-level or as part of Syntax, depending on the language, and above Θ' is the Syntax proper. This hypothesis resonates with Hale and Keyser's (1991, 1993) notions of L- and S-Syntax, as well as Lin's (2001) *Lexicalization Parameter*. **Hypothesis 2:** Function Application is required in argument positions in the Syntax proper (i.e. above Θ'), based on the fact that all English arguments are of e- or quantifier-type (Carlson, 1977). (1b) is thus blocked, and we also explain why P-I NPs (property NPs) are only found as objects cross-linguistically. **Deriving P-I properties: I. Number Neutrality-** We can follow Dayal's (2011) analysis that number neutrality in P-I NPs arises from the *iterative* reading of the verb by implementing Lasersohn's (1995) pluractional operator (OP_{PA}) in the current theory:

(10) $[_{vP}\ [_{DP}$ Lisi$]\ [_{v'}\ v\ [_{\Theta P}\ [_{\Theta'}\ [_{DrP}$ yi tian$]\ [_{\Theta'}\ OP_{PA}\ [_{\Theta'}\ \exists\ [_{\Theta'}\ \Theta\ [_{VP}\ [_{V'}$ mai-le $[_{NP}$ che$]]]]]]]]]]$ (=(4a))

$[\![OP_{PA}]\!] = \lambda P \lambda E\ [\text{Card}(E) \geq 2 \wedge \forall e \forall e' \in E\ [P(e) \wedge \neg\tau(e) \circ \tau(e') \wedge \exists t\ [\text{between}(t, \tau(e), \tau(e')) \wedge \neg\exists e''\ [P(e'') \wedge t = \tau(e'')]]]]$ (*redefined*)

$[\![(4a)]\!] = \lambda E\ [\text{Card}(E) \geq 2\ \forall e \forall e' \in E\ [\exists x\ [\textit{sell}(e) \wedge \textit{car}(x, e) \wedge \text{Th}(x, e) \wedge \neg\tau(e) \circ \tau(e') \wedge]] \wedge \tau(E) = \textit{one-day} \wedge \text{Ag}(Lisi, E)]$ (*leaving out the underlined part above for space*)

$\rightsquigarrow \exists$ *scopes below the plurality of events (E), permitting x to vary across the sub-events.*

Telicity is defined on atomic events (Dayal, 2011) and cannot accommodate OP_{PA}, hence leading to the exactly-one reading under existential closure of *x* in the single event (4b). **II. Obligatory narrow scope-** Since the open internal argument position of Θ' has to be existentially closed below the DrP for the semantic composition to proceed, any operator higher than ΘP will scope over the bare NP (e.g. the deontic modal/negation in (5)). **III. Inability of discourse anaphora-** Since the bare NP is a property of type <e, st>, the pronominal anaphors, which are of type <e>, simply are not appropriate for it, (6). **Typological predictions:** The current theory predicts strict proximity between P-I NPs and verbs, modulo verb movement or scrambling. Support for this prediction can be found in Turkish. Regular and P-I NP objects in Turkish, reflected by Case-marking, show positional differences in proximity with the verb (Özyıldız, 2016):

(11) a. Ali bira-yi hizli *bira-yi icer.
Ali beer-ACC fast beer-ACC drinks
'Ali drinks beer fast.'

(12) a. Ali #bira hizli bira icer.
Ali beer.∅ fast beer.∅ drinks
'Ali drinks beer fast.'

We can also explain the Case-marking contrast between regular and P-I objects in Hindi and Turkish, and its correlation with the positions of the objects given the proposal of Θ^0: Spec.ΘP, right below *v*, is a Case position while the complement position of V that is further down is not.