

Applied Objects in Mandarin and the Nature of Selection

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Languages are known to express a wide range of senses via the two different syntactic forms in (1). Applicative form deploys *v/V*-projections, often marked by special verbal morphology (-*APPL*). Oblique form uses an additional class of non-verbal heads, typically prepositions (*P*).

(1)	Applicative	Oblique
<i>Form:</i>	α V- APPL β γ	α V γ [P β]
<i>Sense:</i>	CAUSED POSSESSION, BENEFACTIVE/MALEFACTIVE/ SUBSTITUTIVE, INSTRUMENTAL, CAUSED MOTION/LOCATION, STIMULATIVE, MANNER, REASON	

Some languages favor the latter (e.g., English); some favor the former (e.g. Igbo); some show robust alternation (e.g., Kinyarwanda). The syntactic relation between the forms – derivation vs. separate projection – has been controversial.

In this paper we consider a range of data involving “oblique arguments” in Mandarin mono- and di-transitive sentences, which diverge both dramatically and subtly from comparable English forms. We propose an account of these constructions based on Larson (2014, 2017), which recasts θ -roles as formal syntactic θ -features and θ -role assignment as θ -feature agreement and provides a general account of structure projection and argument inversion. Our core proposal is that Mandarin oblique arguments should be analyzed uniformly as **applied objects**, which have raised from the position of obliques, sometimes inverting around another argument in the process. We provide a precise account of raising in these cases within the framework of the Minimalist Program, which typically involves a probe-goal mechanism, but which, as we show, can also operate through what we identify as “transitive agreement”. We observe that our proposal, while drawing together a large set of Mandarin constructions, also raises significant questions about the nature of selection - in particular the extent to which it is semantically based. We argue that the facts of Mandarin “oblique arguments” suggest a strongly distributional view of selection, one which departs sharply from the usual semantically-based picture familiar since Frege (1893).

1.0 Oblique Arguments in Mandarin

1.1 Monotransitives with Circumstantial Roles

Lin (2001) draws attention to interesting monotransitive paradigms in Mandarin like (2a-d). (2a) exhibits a “canonical” patient object. whereas (2b-d) exhibit “non-canonical,” objects bearing various oblique thematic roles, including instrument, location and time (resp.).¹

- (2) a. Wo chi **niu-rou mian**.
I eat beef noodle
'I eat beef noodle.'
- b. Wo chi **da-wan**.
I eat big-bowl
'I eat with/using a big bowl.'
- c. Wo chi **guanzi**.
I eat restaurant
'I dine at a restaurant.'

- d. Wo chi **xiawu**.
 I eat afternoon
 ‘I dine in the afternoon.’

As many subsequent authors have noted (Barrie and Li 2014; Li 2011, 2014; Zhang 2005) although the boldfaced items in (2b-d) resemble circumstantial adverbs semantically, they pattern like direct objects syntactically, e.g., in being separable from V by ASP (showing non-incorporation) (3a), in co-occurring with duration/frequency phrases (3b), in combining with V + affected object (3c), and in being relativizable (3d):

- (3) a. Ta hua-**guo** na-mian qiang.
 he draw-ASP that-CL wall
 ‘He has drawn on that wall.’
 b. wo shang xingqi chi-le **san-ci/tian** mian/fandian.
 I last week eat-LE **three-times/day** noodle/restaurant
 ‘I ate noodles/at restaurants three times/days last week.’
 c. wo jiu hua-le **ta** san-zhang zhi.
 I only paint-LE **him** three-CL paper
 ‘I only painted on three pieces of paper (on him) (he was affected).’
 d. ta chi de (**canting**) dou shi haohua canting.
 he eat DE (**restaurant**) all be fancy restaurant
 ‘(The restaurants where) he ate were fancy restaurants.’

In presence of a canonical agent or experiencer subject, non-canonical and canonical objects seem to “compete” insofar as only one is permitted. Compare (2a-e) and (4a-e), from Li (2014):

- (4) a. *Wo chi **da-wan niu-rou mian** ‘I eat beef noodle with a big-bowl.’
 b. *Wo chi **guanzi niu-rou mian** ‘I eat beef noodle in a restaurant.’
 c. *Wo chi **xiawu niu-rou mian** ‘I eat beef noodle in the afternoon.’
 d. *Wo chi **xiawu guanzi** ‘I eat in a restaurant in the afternoon.’
 e. *Wo chi **xiawu guanzi da-wan niu-rou mian**
 ‘I eat beef noodle with a big-bowl in a restaurant in the afternoon.’

Interestingly, absence of a canonical agent or experiencer subject yields more possibilities. Both canonical and non-canonical objects can “promote” to subject status. Li (2014) gives alternations like (5)-(8), where argument order appears to invert:

- (5) a. xiao bei he lücha INSTRUMENT > THEME
 small cup drink green.tea
 ‘Use the small cup to drink the green tea.’
 b. lücha he xiao bei THEME > INSTRUMENT
 green.tea drink small cup
 ‘Green tea is drunk with small cups.’
 (6) a. da dianyingyuan kan dongzuo pian; xiao dianyingyuan kan katong pian.
 big theater watch action film small theater watch cartoon film
 ‘Big theaters are for watching action films; small theaters are for watching cartoons.’
 LOCATION > THEME

- b. dongzuo pian kan da dianyingyuan; katong pian kan xiao dianyingyuan.
 action film watch big theater cartoon film watch small theater
 ‘Action films are to watch in big theaters; cartoons are to watch in small theaters.’
 THEME > LOCATION
- (7) a. wanshang mai lubiantan. TIME > LOCATION
 evening sell street.stall
 ‘Sell at street stalls in evenings.’
 b. lubiantan mai wanshang. LOCATION > TIME
 street.stall sell evening
 ‘Sell at street stalls in evenings.’
- (8) a. zaoshang qie zhe-ba dao. TIME > INSTRUMENT
 morning cut this-CL knife
 ‘Cut with this knife in the morning.’
 b. zhe-ba dao qie zaoshang. INSTRUMENT > TIME
 this-CL knife cut morning
 ‘This knife is to cut with in the morning.’

These phenomena sharply distinguish Mandarin from English, in which the equivalents of (2b-d) would all demand oblique syntax – i.e., the presence of a preposition. Furthermore, with P present there would be no “competition”. As the glosses of (4a-e) show, the patient object is fully compatible with all of the obliques. Finally, pairs like (5)-(8), in either order, are simply unavailable in English with anything resembling their Mandarin grammar.

1.2 Monotransitives with Possessive Roles

Mandarin grammar also includes monotransitives of the famous type shown in (9a)-(11a), whose analysis, and even whose appropriate English gloss, has been highly controversial.² The subject in such examples has been analogized to so-called “ethical dative” arguments, under which they receive the gloss as in (9b)-(11b). An alternative is to understand them as “split-possessives” under which the gloss in (9c)-(11c) are correct:

- (9) a. Wangmian si le fuqin.
 Wangmian die ASP father
 b. ‘Wangmian had his father die on him.’ Ethical Dative gloss
 c. ‘Wangmian’s father died.’ Split Possessor gloss
- (10) a. Jianyu pao le fanren.
 Jail run ASP convicts
 b. ‘The jail had its convicts escape on it.’ Ethical Dative gloss
 c. ‘The jail’s convicts escaped.’ Split Possessor gloss
- (11) a. Zhangsan shaihong le lian.
 Zhangsan sunburn ASP face
 b. Zhangsan had his face sunburn on him.’ Ethical Dative gloss
 c. Zhangsan’s face sunburned.’ Split Possessor gloss

Zhang (2015b) observes that subject and objects in so-called “Wangmian sentences” seem to involve the stronger relation of possession rather than the weaker about-ness relation of ethical

datives. She notes examples like (12a)-(13a), which might be expected to be good as ethical datives (12b)-(13b), but are in fact anomalous in a way comparable to true possessives (12c)-(13c):

- (12) a. #Wangmian si le Lisi.
 Wangmian die ASP Lisi
 b. ‘Wangmian had Lisi die on him.’ *Ethical Dative gloss*
 c. #‘Wangmian’s Lisi died.’ *Split Possessor gloss*
- (13) a. #Zhangsan pao le fanren.
 Zhangsan run ASP convicts
 b. ‘Zhangsan had the convicts escape on him.’ *Ethical Dative gloss*
 c. ‘Zhangsan’s prisoners escaped.’ *Split Possessor gloss*

Zhang (2015b) notes further that the verb in “Wangmian constructions” must be one whose surface subject is derived – i.e., an unaccusative like *si* ‘die’ and *pao* ‘escape’ or a middle like *shaihong* ‘sunburn’. Unergatives like *dapenti* ‘sneeze’ or *dahandajiao* ‘shout’ are disallowed (14a,b):

- (14) a. *Wangmian **dapenti** le fuqin.
 Wangmian sneezed ASP father
 ‘Wangmian’s father sneezed.’
 b. *Jianyu **dahandajiao** le fanren.
 Jail shouted ASP convicts
 ‘The jail’s convicts shouted.’

Again, these phenomena sharply distinguish Mandarin from English, in which the equivalents of (9)-(11) would all demand explicit possessive syntax – i.e., the presence of a genitive.

1.3 Ditransitives

English and Mandarin pattern more similarly with respect to oblique arguments in ditransitive constructions. Mandarin exhibits an alternation involving a prepositional dative (PPD) and a double object construction (DOC1) that appears quite parallel to that in English (15a,b).³

- (15) a. Zhangsan song/jie le [liang bai kuai qian] [PP **gei** Lisi]. *PPD*
 Zhangsan give/lend PERF two hundred CL money **to** Lisi
 ‘Zhangsan gave/lent two hundred dollars to Lisi.’
 b. Zhangsan song/jie le [Lisi] [liang bai kuai qian]. *DOC1*
 Zhangsan give/lend PERF **Lisi** two hundred CL money
 ‘Zhangsan gave/lent Lisi two hundred dollars .’

Nonetheless, as noted by Gu (1999), the situation is in fact more complex. Alongside (9a,b) we also get (16a) with no English counterpart (DOC2) and (16b) with very “un-English” word order (*Pre-V Dative*).

- (16) a. Zhangsan song **gei**/jie **gei** le [Lisi] [liang bai kuai qian]. *DOC2*
 Zhangsan give to/lend to PERF **Lisi** two hundred CL money
 ‘Zhangsan gave/lent Lisi two hundred dollars.’

- b. Zhangsan [**gei Lisi**] song/jie le [liang bai kuai qian]. *Pre-V Dative*
 Zhangsan to Lisi give/lend PERF two hundred CL money
 'Zhangsan gave/lent two hundred dollars to Lisi.'

The basic paradigm in (15)-(16) including “incorporated *gei*” recurs with various other Mandarin datives (17)-(18), and with benefactives (19), although sometimes with degradation (18b) or meaning shift (19b) in the “bare” DOC form (DOC1).

- (17) a. Zhangsan xie le [yi feng xin] [**PP gei Lisi**]. *PPD*
 Zhangsan write PERF one CL letter to Lisi
 'Zhangsan wrote a letter to Lisi.'
- b. Zhangsan xie le [**Lisi**] [yi feng xin]. *DOC1*
 Zhangsan write PERF **Lisi** one CL letter
 'Zhangsan wrote a letter to Lisi.'
- c. Zhangsan xie **gei** le [**Lisi**] [yi feng xin]. *DOC2*
 Zhangsan write **to** PERF **Lisi** one CL letter
 'Zhangsan wrote a letter to Lisi.'
- d. Zhangsan [**gei Lisi**] xie le [yi feng xin]. *Pre-V Dative*
 Zhangsan **to Lisi** write PERF one CL letter
 'Zhangsan wrote a letter to Lisi.'
- (18) a. Zhangsan mai le [yi ben shu] [**PP gei Lisi**]. *PPD*
 Zhangsan sell PERF one CL book to Lisi
 'Zhangsan sold a book to Lisi.'
- b. ??Zhangsan mai le [**Lisi**] [yi ben shu]. *DOC1*
 Zhangsan sell PERF **Lisi** one CL book
 'Zhangsan sold a book to Lisi.'
- c. Zhangsan mai **gei** le [**Lisi**] [yi ben shu]. *DOC2*
 Zhangsan sell **to** PERF **Lisi** one CL book
 'Zhangsan sold a book to Lisi.'
- d. Zhangsan [**gei Lisi**] mai le [yi ben shu]. *Pre-V Dative*
 Zhangsan for Lisi buy PERF one CL book
 'Zhangsan Zhangsan sold a book to Lisi.'
- (19) a. Zhangsan mai le [yi ben shu] [**PP gei Lisi**]. *PPD*
 Zhangsan buy PERF one CL book for Lisi
 'Zhangsan bought a book for Lisi.'
- b. Zhangsan mai le [**Lisi**] [yi ben shu]. *DOC1*
 Zhangsan buy PERF **Lisi** one CL book
 'Zhangsan bought a book **from Lisi**?/for Lisi.'
- c. Zhangsan mai **gei** le [**Lisi**] [yi ben shu]. *DOC2*
 Zhangsan buy **for** PERF **Lisi** one CL book
 'Zhangsan bought a book for Lisi.'
- d. Zhangsan [**gei Lisi**] mai le [yi ben shu]. *Pre-V Dative*
 Zhangsan for Lisi buy PERF one CL book
 'Zhangsan bought a book for Lisi.'

This survey of oblique argument behavior, though brief, raises simple but intriguing questions.

How might we make sense of the specific behaviors of the Mandarin examples and of their divergences (both subtle and sharp) from the corresponding English forms? Below we argue that Mandarin oblique arguments should be analyzed uniformly as **applied objects**, counterpart to those found in world languages like Bahasa, Kinyarwanda, Halkomelem, etc. We spell out this idea using the account of syntactic projection in Larson (2014, 2017), based on analyzing θ -roles as formal features and θ -role assignment as feature agreement controlled via a θ -feature hierarchy.

2.0 Projection via θ -features

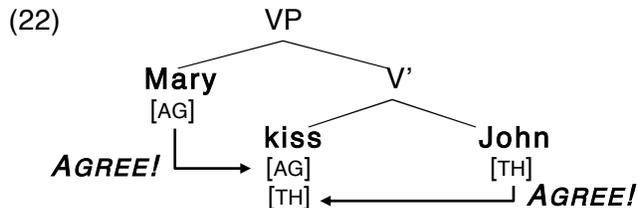
Larson (2014, 2017) proposes that θ -roles - AGENT, THEME, GOAL, LOCATION, etc. - from the Government Binding Theory (Chomsky 1981) be reanalyzed as formal syntactic features - θ -features like [AG], [TH], [GL], [LOC], etc. - that are born by predicates and arguments and that undergo agreement at the point of external merge. For example, the traditional analysis of English *kiss* as bearing AGENT and THEME θ -roles that are assigned to its arguments during composition might be reinterpreted in terms of *kiss* bearing the pair of θ -features - [AG] and [TH] - which undergo agreement with a corresponding feature on an argument at the point of external merge (20):



As a counterpart to a thematic hierarchy AGENT > THEME > GOAL > LOCATION governing order of θ -role assignment in syntactic composition, Larson (2014) assumes a feature hierarchy [AG] > [TH] > [GL] > [LOC] >... and the constraint (21):⁴

(21) **Constraint:** a feature F in a set S can undergo agreement only if there are no lower-ranked, unagreed feature F' in S.

Under (21), the hierarchy of θ -features will determine the hierarchical projection of arguments, as illustrated in (22). Given [AG] > [TH] and (21), the object argument – the one bearing [TH] - must merge and agree first.



2.1 Syntactic Features (Pesetsky and Torrego 2007)

The basic account sketched above requires further elaboration given recent developments in the theory of features, which now draws a key distinction between instances of features F according to whether they are **interpretable, valued** or neither (i.e., uninterpretable-unvalued). Broadly speaking, this move imports the PF-LF distinction into features (or, more precisely, instances of

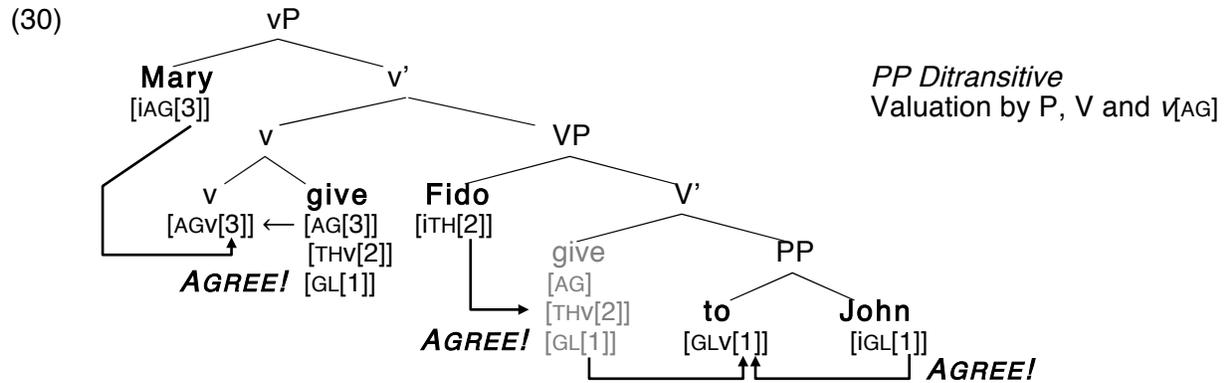
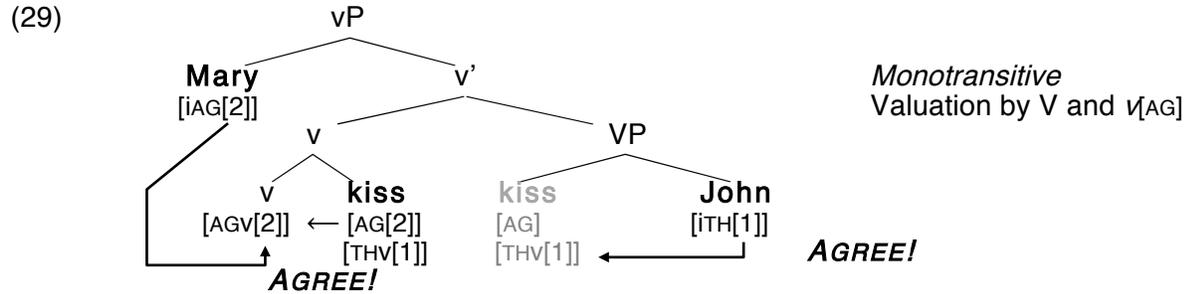
them). Thus interpretable instances of features, notated “iF”, are ones associated with “meaning” – i.e., with instructions to the conceptual-intentional system (23a). Valued instances of features, notated “Fv”, are ones associated with “pronunciation” – i.e., with instructions to the system of expression (23b). Uninterpretable-unvalued instances of features, notated simply “F”, are concordial – i.e., they have no independent LF content and whatever pronounced content they have is derivative on their relation to a valued feature (23c).

- (23) a. [iF] **interpretable** F, associated with a “meaning”
 b. [Fv] **valued** F, associated with visible marking/pronunciation
 c. [F] **uninterpretable-unvalued** F, concordial

Under the theory of features in Pesetsky and Torrego (2007), unvalued instances of features ([iF] or [F]) probe their c-command domain seeking to agree with another instance of F. In order for a feature F to be “legible” at the interfaces, it must have both interpretable and valued instances linked by agreement. Thus all of (24a-c) will constitute legible features since all represent a set of instances linked by agreement (signified by indexing with “n”) and all contain both an interpretable instance of F and a valued instance of F. By contrast (25a-e) will not constitute legible features since one or more of the required conditions – presence of an interpretable instance, presence of valued instance, linking by agreement – fails to hold:

- (24) a. iF[n] ... Fv[n]
 b. iF[n] ... F[n] ... Fv[n]
 c. iF[n] ... F[n] ... F[n] ... Fv[n]
- (25) a. iF
 b. Fv
 c. iF[n] ... F[n]
 d. F[n] ... F[n]
 e. iF ... F

As a brief illustration of these concepts in the domain of case, consider (26a) below from German, containing the transitive verb *küssen* ‘kiss’ and an object showing multiple instances of accusative agreement. Chomsky (1995) analyzes *v* as the source of accusative case in such examples. Under Pesetsky and Torrego (2007), *v* can be analyzed as bearing an interpretable, unvalued accusative feature (iACC), which agrees with the valued, uninterpretable instance of the same feature (ACCval) on the object noun (*Mädchen*). The determiner (*das*) and the adjective (*hübsche*) are concordial for this feature, i.e., they bear instances of [ACC] that are neither interpretable nor valued. Assuming composition proceeds bottom-up as in (26b), unvalued [ACC] on *hübsche* first probes [ACCv] on *Mädchen* and, upon merger, agrees with it (①). Unvalued [ACC] on *das* then probes [ACC] on *hübsche* and agrees with it on merger (②). Finally unvalued [iACC] on *v* probes [ACC] on *das* and agrees with it when *v* and VP are merged (③), yielding a feature structure corresponding to (26c), which is licensed, as we noted.



In (29) only the [TH] feature on *kiss* is valued, which requires [AG] to be valued by another element, here a little *v* voice head, which attracts *kiss* and agrees with it on [AG]. The agent phrase (*Mary*) then merges, agreeing with $v[AG]$. In (30), *give* bears the θ -feature set {[AG], [THV], [GL]} where again only the theme feature [TH] is valued. This requires both [GL] and [AG] to be valued by other, independent elements. In (30) [GL] is valued by the preposition *to*, which afterwards itself undergoes agreement with V; [AG] is once again valued by little *v*, just as in (29).

These refinements, while important, preserve the basic picture in (22): the θ -feature hierarchy continues to determine the projection order of arguments. *v*'s and P's enter the picture only to assist with the feature valuation that V cannot provide on its own.

2.3 Argument Inversion

2.3.1 Movement and Minimality

Derivational analyses purporting to invert lower arguments over higher ones (e.g., Psych Movement, Dative Shift, Instrumental Inversion) face a key challenge from Minimality (Chomsky 1986, Rizzi 1991). Under the theory of movement adopted within the Minimalist Program (Chomsky 1995), a head α bearing an edge feature (ϵ) and a feature [F] capable of undergoing agreement probes its c-command domain for a [F]-bearing β (31a). Upon probing β , α agrees with it on [F], activates its edge feature and raises β to its Spec (31b).

- (31) a. [$_{\alpha P}$ α ... [... β ...]]
 $[\epsilon, F] \rightarrow \text{probes} \rightarrow [F]$
 b. [$_{\alpha P}$ β α ... [... β ...]]
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Crucially, the probe-goal relation respects Minimality; α cannot probe γ “through” an intervening β that is a potential [F]-bearer (32a). But then how could raising of a lower γ across a higher β

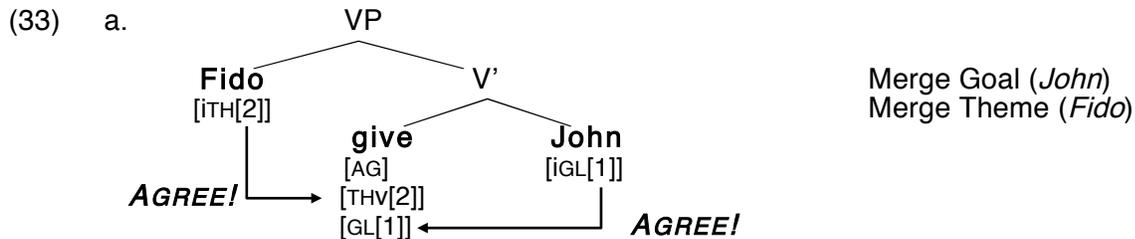
occur? How can α establish agreement with γ necessary for raising (32b)?

- (32) a. [_{αP} α ... [... β ... [... γ ...]]
 [F] → probes → X → ... → [F]
 b. [_{αP} γ α ... [... β ... [... γ ...]]
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 ???

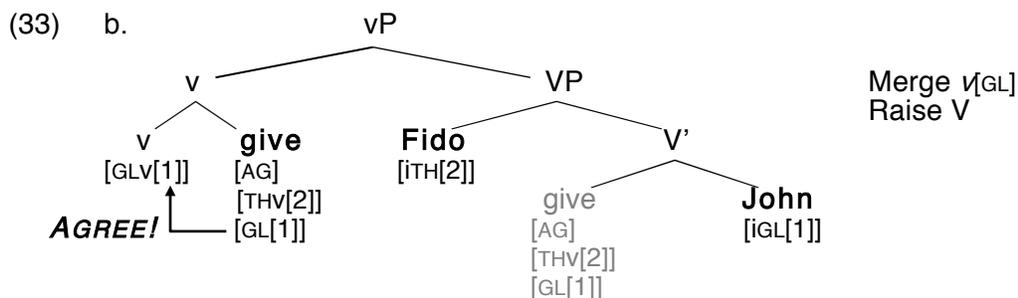
Note that this problem will be particularly acute if the probed features are θ -features and β is a potential argument phrase (DP, PP). Intervening arguments β will always be potential $[\theta]$ -bearers, hence will always intervene from the standpoint of Minimality.

2.3.2 “Transitive Agreement”

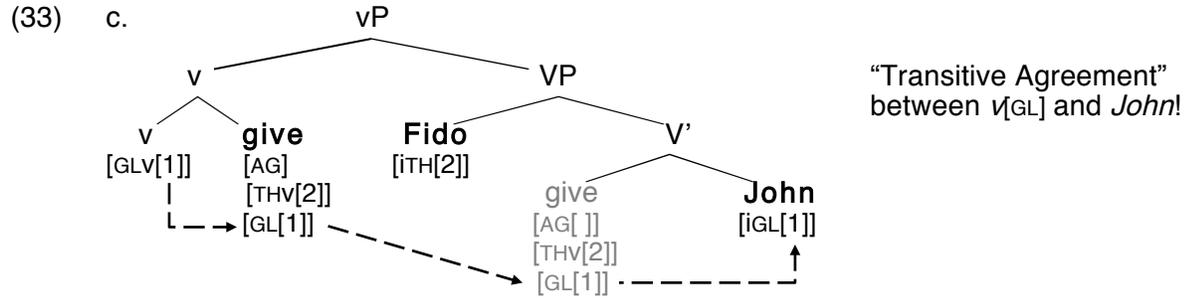
Derivations in which a head carries a set of θ -features up the tree show how argument inversion can be triggered by θ -features without incurring a Minimality violation. A concrete case is illustrated in the derivation sequence (33a-d) below. The verb *give* merges first with its goal argument and then with its theme argument, following the hierarchy of thematic features and the constraint in (21). Observe in (33a) that although merge has taken place between *give* and *John* on the basis of $[\text{GL}]$, the latter remains unvalued since *give* is valued only for $[\text{TH}]$:



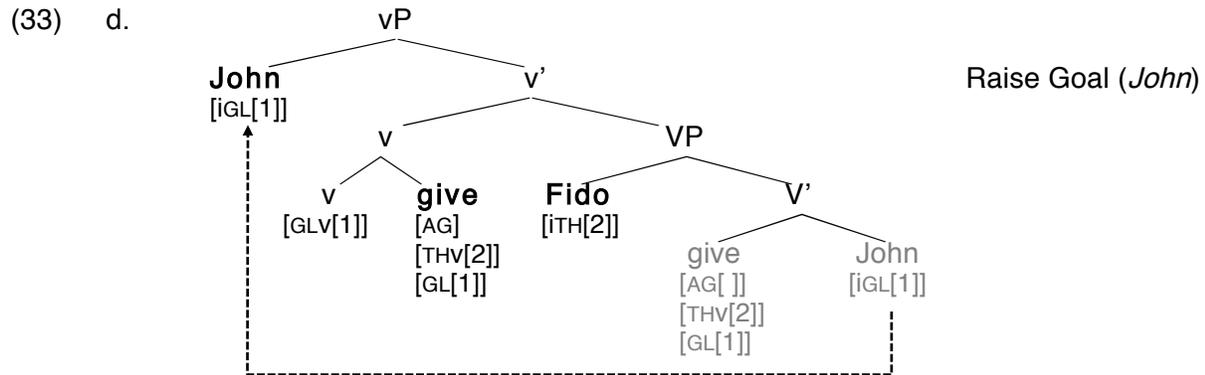
Suppose we next merge a little *v* bearing a valued $[\text{GL}]$ feature. The latter attracts *give* and, because of the newly established c-command relation between them, is able to agree with *give* on $[\text{GL}]$ (33b):



Observe now that since *v* agrees on $[\text{GL}]$ with *give*, and *give* agrees on $[\text{GL}]$ with *John*, *v* agrees on $[\text{GL}]$ with *John*. This agreement occurs, as it were, “by transitivity” (33c):

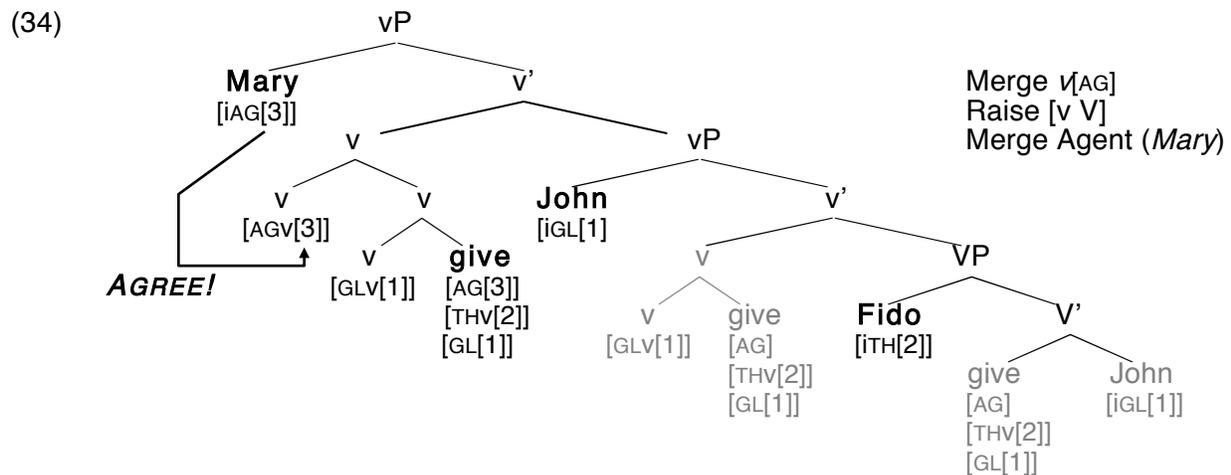


Assuming that $v_{[GL]}$ can activate an edge feature and raise the argument agreeing with it, we derive (33d), where the goal argument crosses over the theme without incurring a Minimality violation:

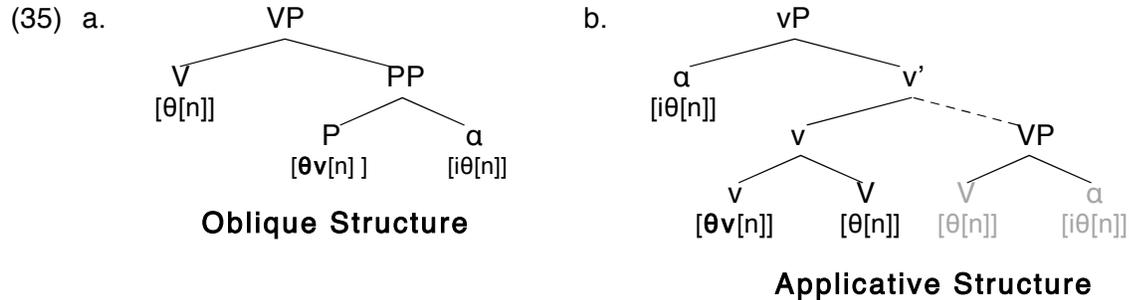


Crucial to this derivation is the role of the verbal head (here *give*), which agrees locally with the lower argument (*John*), and then raises from beneath the intervening argument (*Fido*), carrying agreement with it to the higher v . This allows v to establish a movement-enabling agreement relation with the lower argument without having to probe that argument directly, in violation of Minimality.

The agent θ -feature can now be valued by $v_{[AG]}$ (34), in parallel to cases (29) and (30), already discussed.



Larson (2014) terms the raising in (34d) **Applicative Shift (A Shift)** and takes it to underlie the derivation of all applied objects. The general relation between an oblique structure and its applied counterpart is shown schematically in (35). In an oblique structure (35a), valuation of $[\theta]$ is by P. In an applied structure (35b), valuation of $[\theta]$ is by v .



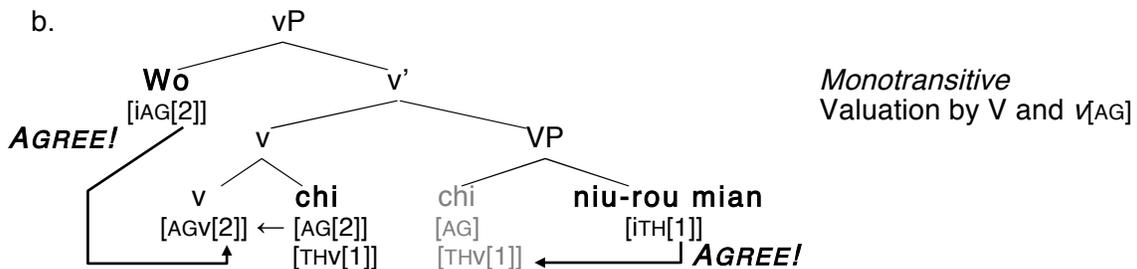
3.0 Mandarin Oblique Arguments as Applied Objects

We now return to the Mandarin monotransitive and ditransitive data, exploring how the proposals developed above yield an account of them.

3.1 Monotransitives with Canonical Subjects and Objects

Mandarin monotransitives with canonical agent/experiencer subjects and canonical theme objects like (36a) (= 2a) can be analyzed in parallel with their English monotransitive counterparts (36b) (compare with 29 above):

(36) a. *Wo chi niu-rou mian.*
 I eat beef noodle
 'I eat beef noodle.'

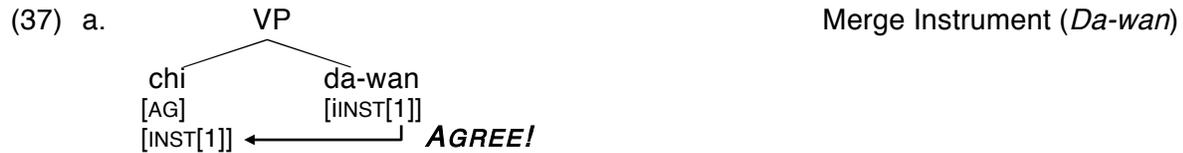


The verb *chi* 'eat' carries canonical θ -features [AG] and [TH] with only the latter valued. The theme (*niu-rou mian*) combines with V directly whereas the agent (*wo*) requires an agentive voice head (v [AG]) to value its θ -feature.

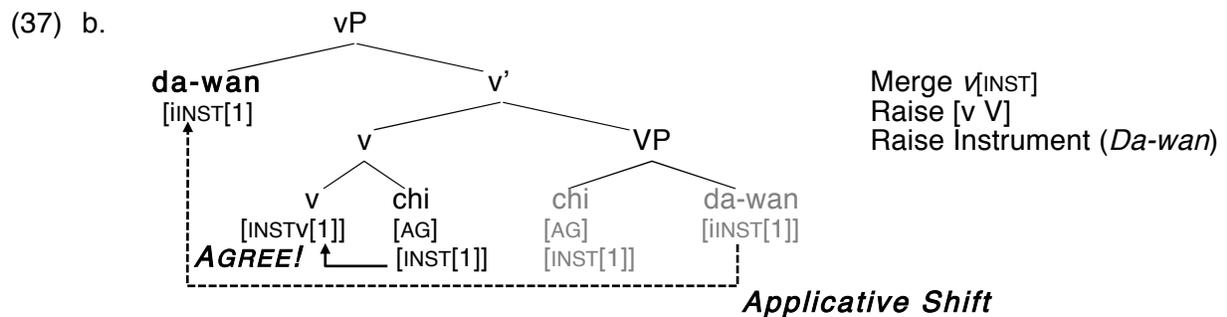
3.2 Monotransitives with Canonical Subjects and Circumstantial Objects

We propose that Mandarin monotransitive sentences with canonical agent/experiencer subjects and circumstantial objects such as (2b) *Wo chi da-wan* 'I eat with/using a big bowl', involve valuation by a little v voice head carrying an oblique θ -feature and accompanying Applicative Shift.

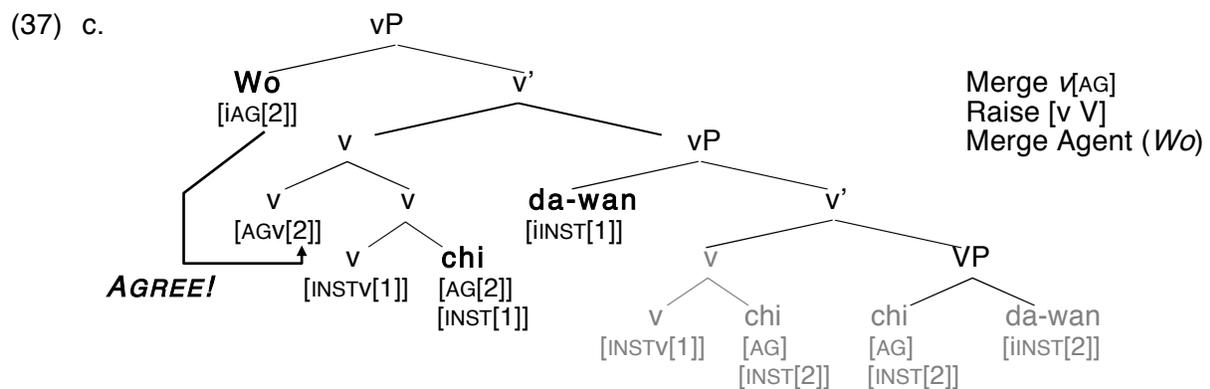
As noted in (36) above, the Mandarin verb *chi* ‘eat’ normally carries an [AG] feature and a valued [TH] feature. Suppose, however, that *chi* is able to delete its [TH] feature and carry an optional instrumental feature [INST] instead. Suppose, furthermore, that although such optional features can be added to V, they cannot be valued on it.⁷ The instrumental argument will then merge first according to the θ -feature hierarchy, but unlike with a theme object, the [INST] feature will be unvalued (37a).



In this circumstance, a little *v* voice head carrying a [INST] feature must be merged with VP. Transitive agreement between *v* and *da-wan* enables raising of the latter to Spec vP (31b), i.e., Applicative Shift (cf. 37b and 35b).

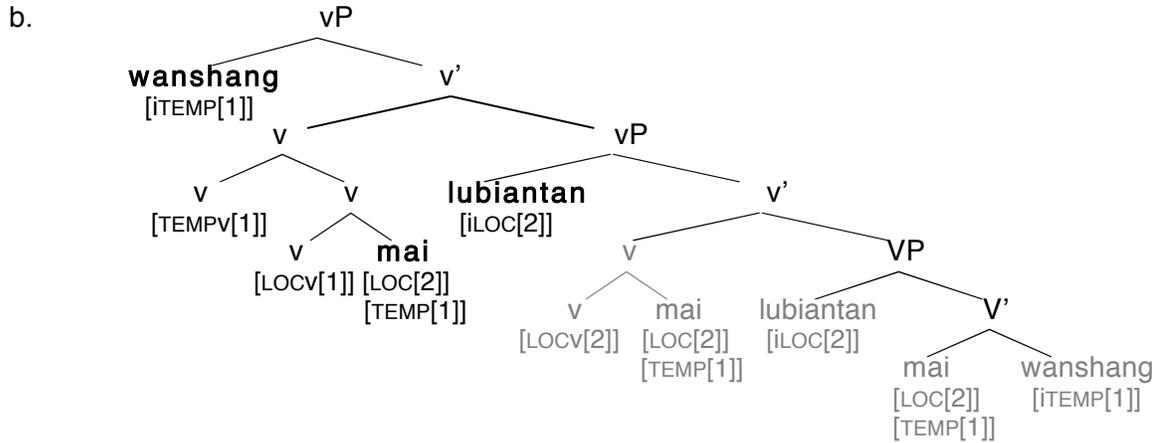


A little *v* voice head bearing a [AG] feature is then merged with vP in the usual way, allowing merge of the agent subject *wo* ‘I’ (37c).



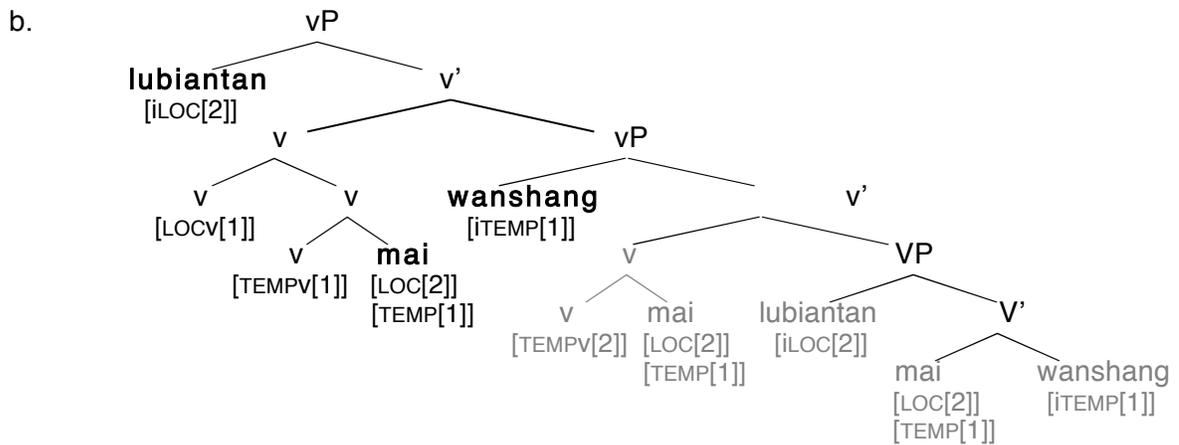
We propose parallel derivations for the remaining Mandarin examples in (2) with locative and temporal objects.

A natural question arises at this point as to why Mandarin disallows co-occurrence of non-canonical and canonical objects (38a). What accounts for the unacceptability of the derivation in (38b) versus the acceptability of the apparently similar derivation for the English double object construction in (34)?



In the derivation of (40a), $v_{[LOC]}$ and $v_{[TEMP]}$ are merged in the order $v_{[TEMP]}$ followed $v_{[LOC]}$, resulting in the locative argument occupying highest Specv position after raising (40b):

- (40) a. lubiantan mai wanshang. LOCATION > TIME
 street.stall sell evening
 'Sell at street stalls in evenings.'



The acceptability of the derivations in (39b) and (40b) creates a tension with respect to the analysis of (38b) above. Recall we blocked examples with combined canonical and non-canonical objects by assuming that none of $v_{[INST]}$, $v_{[LOC]}$ and $v_{[TEMP]}$ is a case probe. But if this is correct, then the only case probe in either (39b) or (40b) will be T, predicting that the lower argument should fail to agree for Case, and hence that both sentences should be ungrammatical. How do we reconcile the unacceptability of (38b) with the acceptability of (39b) and (40b), if Case explains the former?

Descriptively, the fact seems to be that Mandarin is always able to license two arguments regardless of θ -role; that is, two case probes always seem available. We therefore tentatively make the additional proposal that any Mandarin little v selected by T always has the case-licensing privilege of T whatever its thematic composition. More exactly:

- Proposal:**(i) $v_{[AG]}$ and $v_{[GL]}$ are inherent case probes in Mandarin and English, but $v_{[INST]}$, $v_{[LOC]}$ and $v_{[TEMP]}$ are not.
 (ii) In Mandarin, the highest v – v heading the vP selected by T – can be a **derived case probe**.

On this hypothesis $v_{[TEMP]}$ is a derived case probe in (39b) since it heads the vP selected by T. Likewise $v_{[LOC]}$ is a derived case probe in (40b). Accordingly, two case probes are in fact available in both structures.⁸

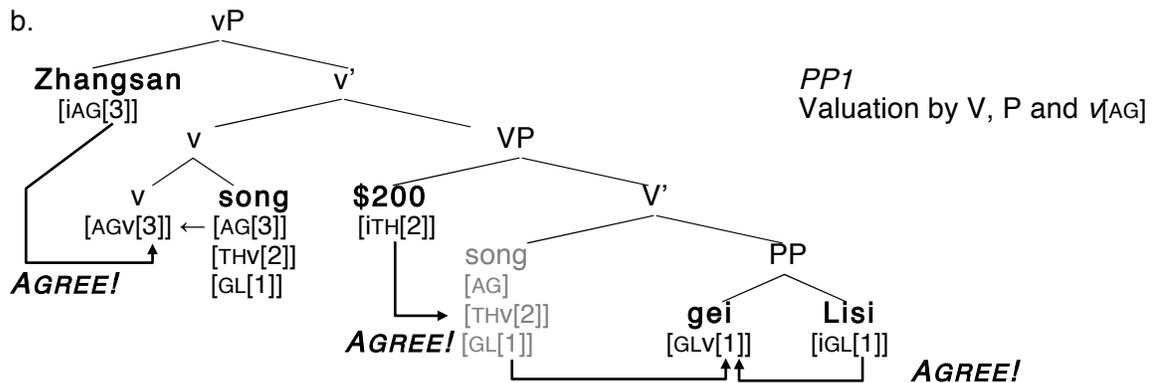
3.4 Ditransitives

We analyze Mandarin ditransitives largely in parallel with English, following proposals in Zhang (2015a).

3.4.1 PP Datives

We analyze Mandarin PP datives with *gei* like (41a) analogously to English *to*-datives. Compare (41b) with (30) above. Here *gei* is analyzed as a preposition bearing a valued goal feature $[GLV]$:

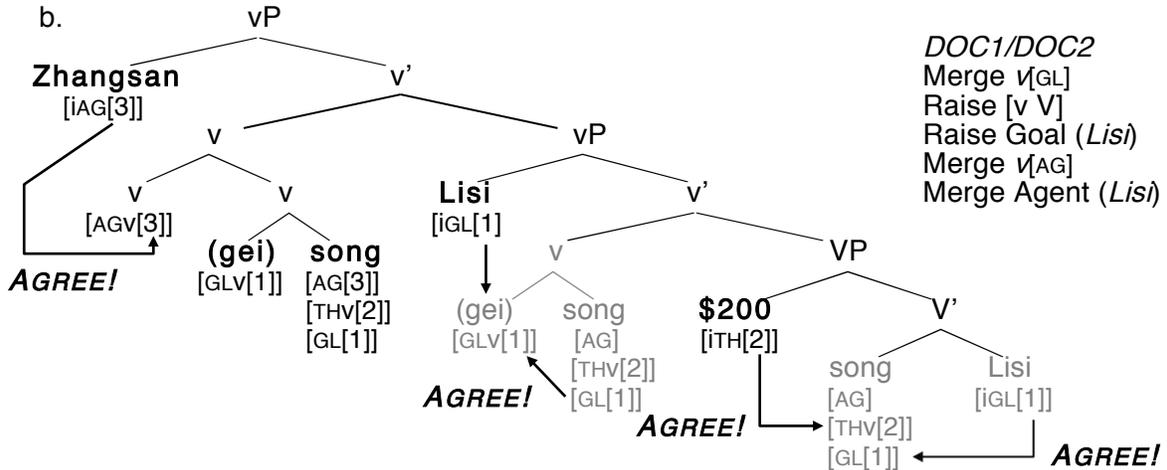
- (41) a. Zhangsan song le [liang bai kuai qian] [PP gei Lisi].
 Zhangsan give PERF two hundred CL money to Lisi
 ‘Zhangsan gave/lent two hundred dollars to Lisi.’



3.4.2 Double Object Constructions

Mandarin double object constructions (DOC1 and DOC2) like (42a) we derive analogously to English DOC forms (33a-d). Crucially, following Zhang (2015a), we assume that Mandarin *gei* realizes not only $P_{[GL]}$ but also $v_{[GL]}$. In other words, *gei* is ambiguous between a goal preposition and a *goal*/voice head (42b).^{9,10} We furthermore assume that $v_{[GL]}$ has a null variant, as in English.¹¹

- (42) a. Zhangsan **song (gei)** le [Lisi] [liang bai kuai qian].
 Zhangsan **give** PERF Lisi two hundred CL money
 ‘Zhangsan gave Lisi two hundred dollars .’



Case in these structures is analyzed just as in the English counterparts: T, $v_{[AG]}$ and $v_{[GL]}$ are all (inherent) case probes in Mandarin, hence each argument will agree for Case in the structures.

3.4.3 Preverbal Datives

Consider next Mandarin preverbal datives like (43) (= 16b), with a goal phrase (*gei Lisi*) preceding the main V (*song*).

- (43) Zhangsan [**gei Lisi**] jie le [liang bai kuai qian] .
 Zhangsan to Lisi lent PERF two hundred CL money
 ‘Zhangsan lent two hundred dollars to Lisi.’

Initially, these might appear to derive from PP Datives by raising and adjunction to the largest vP (44a). However consideration of other ditransitive examples with PP structure shows that such a “PP-fronting” option is not generally available in Mandarin (44b,c).¹²

- (44) a. Zhangsan [_{PP} **gei Lisi**] [_{vP} Zhangsan jie le [liang bai kuai qian] [_{PP} **gei Lisi**]] ??
 ↑
 b. Zhangsan ji le [liang bai kuai qian] [_{PP} **dao Beijing**]
 Zhangsan send PERF two hundred CL money to Beijing
 ‘Zhangsan sent two hundred Yuan to Beijing.’
 c. *Zhangsan [_{PP} **dao Beijing**] ji le [liang bai kuai qian]
 Zhangsan to Beijing send PERF two hundred CL money
 ‘Zhangsan sent two hundred Yuan to Beijing.’

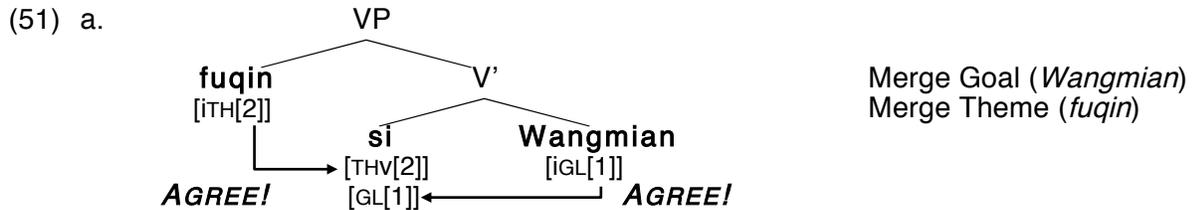
To our knowledge, preverbal datives like (43) are in fact available only with *gei*, and hence their possibility should hinge on the specific properties of this form. As is well known, one property of *gei* separating it from *dao* is that *gei* can itself function as an independent verb meaning ‘give’ (45a,b). And indeed Mandarin speakers do intuit that *gei* is acting as a verb in preverbal dative examples like (43).

- (45) a. Zhangsan **gei** le Lisi liang bai kuai qian.
 Zhangsan **give** PERF Lisi two hundred CL money
 ‘Zhangsan gave Lisi two hundred dollars.’

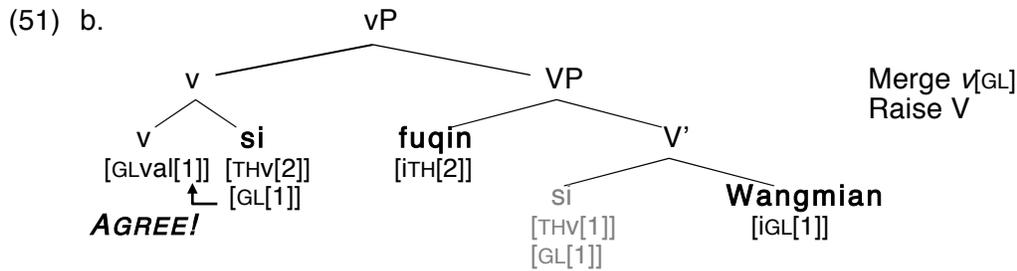
“unaccusative double object constructions”.

- (50) Wangmian si le fuqin.
 Wangmian die ASP father
 ‘Wangmian’s father died.’

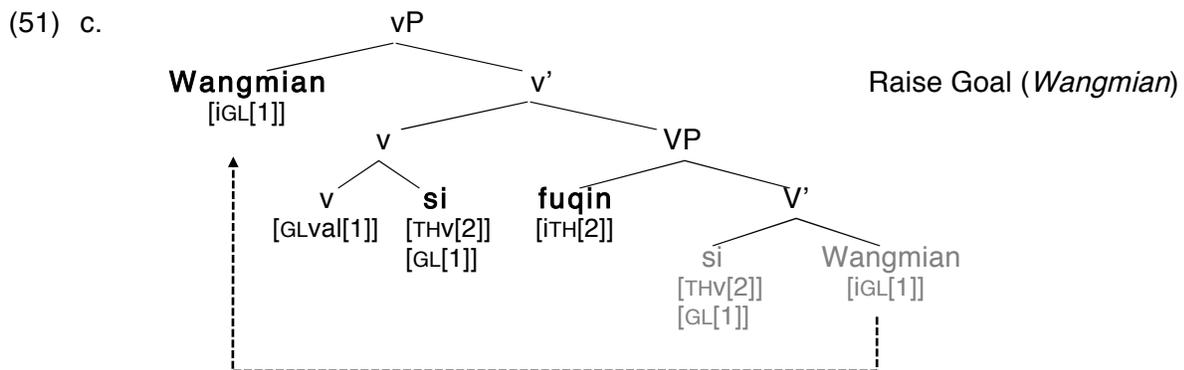
More exactly, assume that Mandarin unaccusative *si* ‘die’, is permitted to bear a goal feature ([GL]) in addition to its usual theme feature ([TH]). The goal argument merges first, followed by the theme (51a). Only the theme feature is valued.¹⁵



Suppose we next merge a little *v* bearing a valued [GL] feature. The latter attracts *si* and agrees with it on [GL] (51b)



Since *v* agrees on [GL] with *si*, and *si* agrees on [GL] with *Wangmian*, *v* agrees on [GL] with *Wangmian*. Little *v* can then activate its edge feature, raising the goal and deriving (51c), where *Wangmian* crosses *fuqin* without violating Minimality. *Wangmian* subsequently raises to the TP subject position.



As noted by Zhang (2015b), this derivation assimilates Wangmian sentences to DOCs insofar as both invert goal over theme. It also assimilates them with respect to a crucial semantic feature observed earlier: in both constructions two NPs stand in a possessor – possessed relation. In

DOCs the relevant NPs are the two object arguments. In Wangmian sentences, they are the subject and object arguments. The account in (51a-c) traces this feature to the same source: both DOCs and Wangmian sentences involve a theme and a possessor goal. Wangmian sentences come out essentially as an “agentless” version of the DOC.

Wangmian sentences do differ from datives in some important respects: whereas DOCs typically have a PPD variant, Wangmian sentences never do. Compare (52) and (53):

- (52) a. Zhangsan song/jie le [Lisi] [liang bai kuai qian]. DOC1
 Zhangsan give/lend PERF Lisi two hundred CL money
 ‘Zhangsan gave/lent Lisi two hundred dollars.’
- b. Zhangsan song/jie le [liang bai kuai qian] [PP gei Lisi]. PPD
 Zhangsan give/lend PERF two hundred CL money to Lisi
 ‘Zhangsan gave/lent two hundred dollars to Lisi.’
- (53) a. **Wangmian** si le fuqin.
 Wangmian die ASP father
 ‘Wangmian’s father died.’
- b. *Fuqin si le [PP gei Wangmian].
 Father die ASP to Wangmian
 ‘Wangmian’s father died.’

Furthermore, whereas DOCs typically show an incorporated *gei* variant (DOC2), Wangmian sentences never do. Compare (54) and (55):

- (54) Zhangsan song **gei**/jie **gei** le [Lisi] [liang bai kuai qian]. DOC2
 Zhangsan give to/lend to PERF Lisi two hundred CL money
 Zhangsan gave/lent Lisi two hundred dollars.’
- (55) **Wangmian** si (***gei**) le fuqin.
 Wangmian die v[GL] ASP father
 ‘Wangmian’s father died.’

We assume that the restriction in both cases is due to specific semantic features of *gei*, which associate it with transfer of possession events. As discussed earlier, these features ultimately make *gei* suitable as a serial verb, but assuming they are carried over into *gei*’s distribution either as a P and a v[GL], they would also make *gei* unavailable with event predicates like *si* ‘die’, which do not involve possession or transfer of possession at all.¹⁶

Interestingly, *gei* is found in Wangmian sentences in a subtly different form. Consider (56), where *gei* occurs pre-verbally:

- (56) Wangmian **gei**-si le fuqin.
 Wangmian GEI-die ASP father
 ‘Wangmian’s father died.’

Pre-verbal *gei* is typically unavailable in simple transitives (57a). However it is as an option in many Mandarin sentences that, descriptively speaking, involve an object that has been fronted across the main verb. Thus pre-verbal *gei* is found in Object Topicalizations (57b),

Ba-Constructions (57c) and *Bei*-Passives (57d):

- | | |
|--|------------------------------|
| (57) a. Zhangsan (* gei -)chi le pingguo.
Zhangsan GEI-eat ASP apple
'Zhangsan ate the/an apple.' | <i>Simple Transitive</i> |
| b. Pingguo, Zhangsan (gei -)chi le pingguo
Apple Zhangsan GEI-eat ASP apple
'The/an apple Zhangsan ate.' | <i>Object Topicalization</i> |
| c. Zhangsan ba pingguo (gei -)chi le pingguo
'Zhangsan BA apple GEI-eat ASP apple
'Zhangsan ate the/an apple.' | <i>BA-Construction</i> |
| d. Pingguo bei Zhangsan (gei -)chi le pingguo
'Zhangsan BEI apple GEI-eat ASP apple
'Zhangsan ate the/an apple.' | <i>BEI-Passive</i> |

The fact that pre-verbal *gei* is also available in Wangmian sentences is at least suggestive of an account like the one offered here, in which an object – here the indirect object *Wangmian* – has raised to a pre-verbal position.¹⁷

4.0 Syntax, Semantics and Selection

The analysis proposed above yields plausible formal derivations for a wide range of Mandarin sentences involving oblique arguments. At the same time some of its key assumptions clash strongly with certain widespread views of selection.

4.1 Selection as Semantic

One common view of predicate selection is that it issues from meaning. On this idea it is part of the meaning of *eat*, for example, that it involves an eater – an agent – and a thing eaten – a theme or patient. The fact that *eat* selects two arguments or bears two θ -roles is simply a reflection of this more basic semantic fact. Frege famously expressed this idea in analogizing predicates to mathematical functions, which require application to arguments of appropriate number and type in order to yield a value. In themselves predicates are “unsaturated” or “incomplete”. Frege’s idea underlies all versions of formal semantics descending from Montague (1974), in which composition of meaning arises primarily by function-argument application. Thus in (58), the verb *eat* contributes a function on two arguments and the nominals supply the individuals serving as arguments.

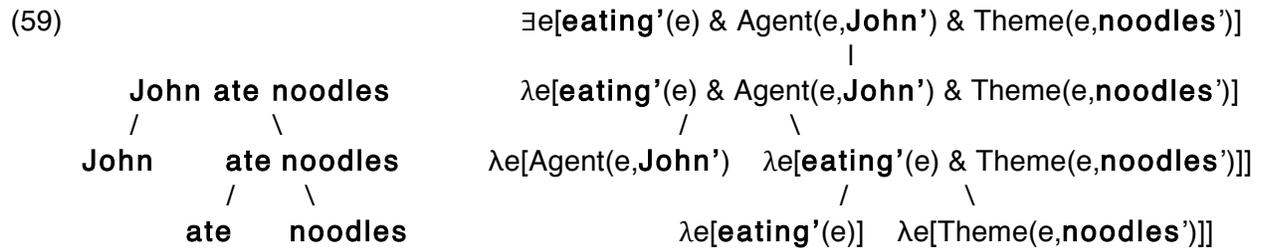
- | | |
|------------------------------|---|
| (58) John ate noodles | ate'(noodles')(John') |
| / \ | |
| John ate noodles | $\lambda x[\text{ate}'(\text{noodles}')(x)] (\text{John}')$ |
| / \ | |
| ate noodles | $\lambda y \lambda x[\text{ate}'(y)(x)] (\text{noodles}')$ |

From this perspective, the analysis offered here for the Mandarin instrumental object in (2b) can only seem strange. Recall our proposal that a basic verb like *chi* ‘eat’, which typically bears [AG] and [TH] features, can delete its valued [TH] feature and carry an optional (unvalued) [INST] feature instead. Under a Fregean, selection-as-meaning view, this would seem to require an alternative concept of eating as an action that only incidentally involves a thing eaten but somehow essentially involves an instrument used to eat with, etc. Similarly for our analysis of Mandarin

Wangmian sentences wherein an unaccusative like *si* ‘die’ is proposed to allow a [GL] θ -feature characteristic of possessives. In what sense does the concept of dying involve possession?

4.2 Selection as Syntactic

Recent developments in the framework of neo-Davidsonian event semantics have opened up interesting alternatives to the classical Fregean picture. Consider the view of semantic combination in (59), for example, which implements ideas from Krifka (1992). Here *eat* contributes only a bare event predicate and the arguments contribute both individuals and thematic relations in which those individuals stand to an event. Composition is by predicate conjunction with a final stage of existential event closure at the top.



Notice that (59), unlike in (58), yields no notion of “semantic incompleteness” that could be understood to drive composition. All of the event predicates in (59), when existentially closed, express complete and coherent truth conditions:

- (60) a. $\exists e[\text{eating}'(e)]$ ‘There is/was eating’
 b. $\exists e[\text{Theme}(e, \text{noodles}')]]$ ‘Something happened to the noodles’
 c. $\exists e[\text{eating}'(e) \ \& \ \text{Theme}(e, \text{noodles}')]]$ ‘There is/was eating and it happened to the noodles’
 d. $\exists e[\text{Agent}(e, \text{John}')]]$ ‘John did something’
 e. $\exists e[\text{eating}'(e) \ \& \ \text{Agent}(e, \text{John}') \ \& \ \text{Theme}(e, \text{noodles}')]]$ ‘There is/was eating and John did it and it happened to the noodles’

Under a picture like (59), therefore, selection between a verb and its arguments cannot be a semantic matter. Rather it must be syntactic.

The theory of θ -features proposed in Larson (2014, 2017) and adopted in this paper fits the semantic picture in (59) very closely. For example, the verb *chi* ‘eat’ in (2b) *Zhangsan chi nou-rou mian* ‘Zhangsan eats beef noodles’ can be understood as contributing only the event predicate (61a). The arguments bearing interpretable instances of θ -features can be interpreted as providing individuals together with their appropriate θ -relations (61b,c). External Merge corresponds semantically to predicate conjunction (61d,e).

- (61) a. $[[\text{chi}]] = \lambda e[\text{eating}'(e)]$
 b. $[[\text{mian}]_{[\text{TH}]}] = \lambda e[\text{THEME}(e, \text{noodles}')]]$
 c. $[[\text{Zhangsan}]_{[\text{AG}]}] = \lambda e[\text{AGENT}(e, \text{Z}')]]$
 d. $[[[\text{VP } \text{chi mian}]_{[\text{TH}]}]] = \lambda e[\text{eating}'(e) \ \& \ \text{THEME}(e, \text{noodles}')]]$
 e. $[[[\text{VP } \text{Zhangsan}]_{[\text{AG}]} \ \text{chi mian}]_{[\text{TH}]}]] = \exists e[\text{eating}'(e) \ \& \ \text{AGENT}(e, \text{Z}') \ \& \ \text{THEME}(e, \text{noodles}')]]$

What brings the predicate and arguments together in this analysis is not semantical. Rather it is the

set of formal syntactic θ -features, born by the arguments and predicates, which are coordinated and formally licensed by means of agreement and movement in the course of the syntactic derivation.

Note that from this perspective, there is nothing semantically exceptional about a Mandarin non-canonical object like *da-wan* ‘big-bowl’ in (2b); composition proceeds exactly as in the canonical case (62). It’s simply that a different interpretable feature occurs on the object, with a corresponding uninterpretable feature on the verb:

- (62) a. $[[chi]] = \lambda e[\text{eating}'(e)]$
 b. $[[da-wan]_{[INST]}] = \lambda e[\text{INST}(e, \text{big-bowl}')]]$
 c. $[[Zhangsan]_{[IAG]}] = \lambda e[\text{AGENT}(e, \mathbf{Z}')]]$
 d. $[[[_{VP} chi da-wan]_{[INST]}] = \lambda e[\text{eating}'(e) \ \& \ \text{INST}(e, \text{big-bowl}')]]$
 e. $[[[_{VP} Zhangsan]_{[IAG]} chi da-wan]_{[INST]}] = \exists e[\text{eating}'(e) \ \& \ \text{AGENT}(e, \mathbf{Z}') \ \& \ \text{INST}(e, \text{big-bowl}')]]$

Analogously for the non-canonical locative and temporal objects in (2c,d) (resp.).

4.3 Cross-Linguistic Variation in Selection

A strictly syntactic account of selection like that sketched above seems to us to fit the facts of Mandarin grammar better than more classical, semantically based views. As discussed insightfully by Li (2014), it appears quite difficult to establish “basic valence” for a given Mandarin verb. Correlatively, it seems quite difficult to associate it securely with a root set of θ -roles. Canonical argument roles are generally suppressible. Furthermore, non-canonical oblique roles seem freely realizable as arguments, subject to plausibility in context, pragmatic and collocational factors. Variability of this kind strongly suggests the absence of a structured Fregean predicate concept lying behind the verb - one dictating a fixed number of arguments required for “saturation” and a determinate set of semantic roles associated with them. Put differently, the Mandarin facts suggests a view wherein predicates denote bare event sortals and selection is actually a composite notion, part semantic/pragmatic, part statistical/distributional, etc. - a gradient and plastic relation that becomes categorical in virtue of being “digitized” by formal grammar.

Of course, a natural comparative question arises as to why Mandarin exhibits the kind of selectional freedom it does as compared to a language like English, which appears more constrained and where the semantical view appears to be more successful. A potential answer is suggested by Dowty (1991) and Grimshaw (1991), who note that freedom in realization of thematic relations in English is characteristic of nominals (63). Thus even though the verb *eat* and the nominal *eating* presumably express the same concept, only in the verbal paradigm are argument requirements expressed:¹⁸

- (63) a. $[_{NP} (\text{John's}) \text{ eating } (\text{of beef noodles/with a large bowl/in restaurants/in the evening})]$ is forbidden.
 b. $[_{VP} (*\text{John}) \text{ ate } *(beef noodles)]$

One way of describing this situation in the current framework is that English predicates lexically specified as verbs can be listed with a set (or sets) of θ -features, requiring certain kinds of arguments to co-occur with them (64a). By contrast, English predicates lexically specified as nominals are not lexically listed with θ -features, but can add them freely, up to plausibility in context and interaction of pragmatic and collocational factors (64b). Evidently θ -features added

optionally on this way are always unvalued, resulting in the need for valuing elements like prepositions or the genitive:

- (64) a. *eat*, V, { [AG],[THV] }
b. *eating*, N, { $\alpha,\beta,\gamma,\dots$ } $\alpha,\beta,\gamma \in \{[AG],[TH],[INST],[LOC],[TEMP],\dots\}$

The suggestion might then be that the Mandarin lexicon somehow more weakly distinguishes verbs vs. nouns – that the categorial distinction is not as clearly drawn, allowing the kind of plasticity in θ -features found with nominal predicates in English to enter the verbal paradigm as well. And since the verbal paradigm can make use of little *v* voice heads, unlike the nominal paradigm, the result is the widespread occurrence of applied objects of various kinds. Unfortunately we must leave this speculation for future development.

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Notes

¹ As discussed by Lin (2001), Barrie and Li (2014) and Li (2014), non-canonical objects involve a number of distinctive features beyond their thematic role. For many speakers, acceptability of examples like (2b-e) is highly dependent on presentation with appropriate pragmatic context. Furthermore, there are issues of conventionalization so that, for instance, *chi da wan* ‘eat with large bowl’ is readily acceptable whereas *chi da kuaizi* ‘eat with large chop sticks’ is not. In other words, some verb–non-canonical object combinations appear to have the status of collocations. We return to these issues in section 4.

² For discussion of Wangmian sentences, see Xu (1999,2001), Han (2000), Pan and Han (2005), Shen (2006), Ren (2009) and Yu and Lu (2011).

³ For discussion of Mandarin ditransitives, including datives and double object constructions, see 顾阳 and 徐烈炯 (1999), 陆俭明 (2002), 思颖 (2004), 冯胜利 (2005)

⁴ Larson (2017) entertains the proposal that the θ -feature hierarchy, might not in fact be universal across languages but rather learned in the course of acquisition. For the purposes of this paper we will maintain the notion of a fixed hierarchy.

⁵ Regarding interpretability of θ -features on arguments, see section 4.

⁶ Little *v*'s bearing valued θ -features are referred to as “voice heads”.

⁷ See section 4 for discussion of these assumptions.

⁸ The assumption that a voice head selected by T can function as a derived case probe may be necessary for English too. Larson (2014) conjectures that English instrumental subjects like *the key* in (ia) raise by Applicative Shift from the lower position occupied by the instrumental in (ib); see (ic). If this is correct, then both T and v [INST] must be case probes in order for correct Case licensing to occur. Nonetheless, English v [INST] cannot be an inherent case probe since this would incorrectly predict the availability of English instrumental double object structures like (id):

- (i) a. **This key** opens this lock.
 b. This lock opens with **this key**.
 c. [_{VP} **the key** v (INST)-open [_{VP} this lock open the key]].
 d. *John opened the key the lock.
 (cf. *John opened the lock with the key.*)

Thus if English v [INST] is a case probe, it must be a derived case probe in the sense proposed for Mandarin above.

⁹ As Zhang (2015a) notes, the status of Mandarin *gei* as both preposition and applicative head strongly recalls the view of Baker (1988), who takes applicative heads to be incorporated prepositions. The analysis proposed here (and in Zhang 2015a) does not propose literal P-incorporation, but rather a version of Marantz (1984) who takes prepositions and applicatives morphemes to have the same feature content up to category (see Zhang 2015a for further discussion).

¹⁰ See also Paul and Whitman (2010) for a derivational proposal also involving raising to Applicative spec position but quite different than the one proposed here.

¹¹ Our trees display V raising as adjunction on the right purely for diagrammatic convenience in indicating agreement relations. Thus in (36b), the order (*gei*) *song* (*v* V) should not be taken to reflect the empirical order of these morphemes.

¹² We are grateful to LIU Lei for examples (38b,c) and for helpful discussion of the material in this section.

¹³ The aspectual element *le* ‘PERF’ is not a potential θ -feature bearer and hence does not intervene from the standpoint of Minimality.

¹⁴ We believe this approach to serial datives can be extended naturally to other Mandarin serial

verb structures such as the *ba*-construction. Demonstrating this claim, however, is beyond the scope of the present paper.

¹⁵ In Larson (2014,2017) the theme feature [TH] in an unaccusative is unvalued. The fact that it can be valued with *si* appears to reflect a broader fact, viz., that Vs bearing only a single θ -feature cannot be valued for it. Thus when *die/si* occurs with a single θ -feature, it must be unvalued for it, but when it occurs with an additional feature, as in Mandarin, it can and in fact is valued for it.

¹⁶ Similar effects are observed with datives. Many English speakers permit DOCs with *deny* (ia), but reject their prepositional variants with *to* (ib):

- (i) a. The boss denied John a raise.
b. ??The boss denied a raise **to John**.

Presumably this is because denial, like prevention, involves keeping something from happening; the boss directed a raise that should have gone to John away from him, etc. Thus the general “ablative” character of denial seems to clash with the goal semantics of *to*.

¹⁷ Note the descriptive generalization also predicts that preverbal *gei* should not occur in DOCs since although these involve fronting of an indirect object, as in Wangmian sentences, with DOCs the latter does not cross the main V. This prediction is correct, as shown in (i):

- (i) *Zhangsan **gei-song le** Lisi liang bai kuai qian.
Zhangsan GEI-give ASP Lisi two hundred CL money
'Zhangsan gave Lisi two hundred dollars'

¹⁸ In starring the absence of *beef noodles* in (63b) we mean only to indicate that on its non-absolutive sense (i.e., on the sense in which it doesn't mean 'dine') *eat* requires an object.