Defective Incorporating Verbs in Mandarin

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This paper identifies a type of noun incorporation in which the verb and a nominal are combined as early saturation of the verb, in contrast to early restriction, which is seen in the familiar type of noun incorporation. Two types of V-V resultative constructions in Mandarin Chinese are compared: the agent-oriented one and the patient-oriented one. The semantic grouping effects of the first verb and the post-verbal nominal of an agent-oriented type show that they are local to each other in their base-positions. But unlike in the patient-oriented one, the first verb in the construction shows a weak reachability. The defectiveness of the verb is parallel to that of an incorporated nominal in the familiar type of noun incorporation: e.g., no modification and no anaphoric linking to a proform. The paper argues that the first verb in the agent-oriented resultative construction and the post-verbal nominal, which can be a full-fledged referential nominal, undergo a type of noun incorporation parallel to the familiar type. In such noun incorporation, instead of the nominal, it is the verb that exhibits root-like properties. Such properties are viewed as a consequence of an early combination of a verb and a nominal, before each of them takes an event-argument, in a neo-Davisonian semantic perspective.

Keywords: agent-oriented resultative, incorporation, restriction, saturation, Mandarin

1. Introduction

In Noun Incorporation (NI), a verb and a nominal are combined in a certain level of syntactic derivation, and the nominal may exhibit defective properties, compared to a regular argumental nominal. In this paper, I show that if a verb exhibits parallel defective properties, its combination with a nominal may instantiate another type of NI.

Compared to other constructions, in a NI or pseudo NI construction, the incorporating verb and the incorporated nominal have a "closer connection" (Johns 2017:1), and this connection establishes a verbal complex semantically (e.g., Chung & Ludusaw 2004; Dayal 2011; Baker 2014). The same syntactic operation applies to N in NI and to NP in pseudo NI (Massam 2001; Dobrovie-Sorin et al. 2006: 52), or overtly in NI and covertly in pseudo NI (Baker 2014). I thus use the general term NI to cover pseudo NI as well as the traditional NI.

Importantly, the closer connection between an incorporating verb and its incorporated nominal has generally also been seen in various restrictions on the latter (e.g., no quality modifier, no determiner, no anaphoric link to a pronoun, a narrow scope, and inability to saturate the internal argument of a transitive incorporating verb) (see Johns 2017 and Olthof 2020 for reviews of more patterns). For instance, the incorporated noun *berry* may not be modified by the quality modifier *fresh* in (1a), and may not be the antecedent of a pronoun in (1b).[1]

(1) a. He is off (*fresh) berry-picking.
    b. He is off berry-picking, *and then he will eat {them/it}.

A hitherto not discussed issue is whether an incorporating verb can be more constrained than a verb in other constructions. A positive answer is given in this paper.

We consider two V-V resultative constructions in Mandarin Chinese: **p**atient-oriented **r**esultative (PR), such as (2a) and (3a), and **a**gent-oriented **r**esultative (AR), such as (2b) and (3b).[2] In both constructions, the first verb (V1) denotes an activity that leads to the result state headed by the second verb (V2). In PR, V2 is a predicate of the patient, but not the agent, of V1. In (2a), it was the shoes, not Yaoyao, that became broken; and in (3a), it was the food of the meal, not Yaoyao, that was gone. In contrast, in AR, V2 is a predicate of the agent, but not the patient, of V1. In (2b), it was Yaoyao, rather than the shoes, that got tired of the shoes; and in (3b), it was Yaoyao, rather than the meal, that was full.

(2) a. Yaoyao   chuan-po-le   na   shuang   xie.   (PR)
        Yaoyao   wear-broken-PRF   that pair   shoe
        'Yaoyao wore that pair of shoes so much that it got broken.'
    b. Yaoyao   chuan-ni-le   na   shuang   xie.   (AR)
        Yaoyao   wear-tired.of-PRF   that pair   shoe
        'Yaoyao wore that pair of shoes so much that she got tired of it.'

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[1] While pronouns need explicit antecedents, definite descriptives do not, as seen in (i). Thus, the restriction in (1b) and (ii) shows the defectiveness of an incorporated noun, compared to a normal use of a nominal.
(i) a.   Mary was raped. But {??he/the man} was never found. (Moltmann 2006: 207)
    b.   Every man who has a wife is sitting next to her.
    c.   ?*Every married man is sitting to her.
(ii) Mary went apple-picking. {#They/The apples} were delicious.   (Dayal 2011: 126)
[2] Abbreviations in the glosses: BA: causative; CL: classifier; DE: modification; PRF: perfective aspect.

(3) a. Yaoyao   chi-guang-le   fan.   (PR)
       Yaoyao   eat-empty-PRF   meal
       'Yaoyao ate and finish the meal.

    b. Yaoyao   chi-bao-le   fan.   (AR)
       Yaoyao   eat-full-PRF   meal
       'Yaoyao ate the meal and as a result she was full.'

I claim that V1 in an AR (e.g., *chuan* 'wear' in (2b)) is an incorporating verb, incorporating the post-V-V DP (e.g., *na shuang xie* 'that pair of shoes' in (3b)), which I call O. As illustrated in (4), the two shaded parts undergo NI. This NI occurs in AR, but not in PR. I show that V1 and O exhibit a close semantic connection in AR, and that the V1 in AR is less reachable than the V1 in PR.

(4)   Incorporation in AR: … V_1V_2-ASP O …

In the AR and PR constructions to be discussed in this paper, the pre-V-V subject must be an agent, we thus do not discuss examples like (5); also, there must be an O related to V1 in the clause, although this O can be topicalized, as in (6), and we thus do not discuss examples like (7), which does not have an O in the clause.[3] We also do not consider other resultative constructions, since a comparison of AR and PR is enough to show a special type of NI.

(5)   Na ben shu kan-fan-le   Yaoyao.
      that CL book look-bored-PRF Yaoyao
      'That book, reading it made Yaoyao bored.'
(6)   Naxie   zhaopian, Yaoyao   kan-fan-le.
      those   photo   Yaoyao   look-bored-PRF
      'Those photos, Yaoyao looks at them so much that she gets bored with them.'
(7)   Zhangsan chi-bao-le   (*zhe   dun fan).
      Zhangsan eat-full-PRF   this   CL meal
      'Zhangsan was full.'   (Bi & Pan 2018: 378)

Moreover, I assume that the V1-V2 cluster is formed by the head

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[3] In Taiwan Southern Min, the counterpart of the O-less (7) is fine, but not those of (2b), (3b), and (6). The unergative V1 version of (7) is thus different from the AR constructions discussed in this paper.

movement of V2 to V1 (e.g., Sybesma 1999; Zhang 2007).[4]

I show V1's semantic grouping with O in AR in §2, and its weak reachability in §3. I identify the defectiveness of V1 of AR as a property of a new type NI in §4. I then give a brief syntactic analysis in §5. In §6, I analyse this type of NI as early saturation of verbs, different from the familiar type of NI, which is early restriction of verbs. §7 concludes.

2. The semantic grouping of V1 and O in AR

The combination of V1 and O in AR may have an idiomatic reading, indicating that the two must be local to each other in their base-positions. The idiomatic phrase *chi xi-jiu* 'Lit. eat happy-wine → attend a wedding' is split as the V1 *chi* and the O *xi-jiu* in the AR in (8a). Similarly, the idiomatic phrase *pai ma-pi* 'Lit. pat a horse's bottom → flatter' is split as the V1 *pai* and the O *ma-pi* in the AR in (8b).

(8)   a.   Nini chi-fan-le   bieren-de xi-jiu,   kaishi   wuse
           Nini eat-tired.of-PRF   other-DE happy-wine   start   seek
           ziji-de   ruyi-lang.
           self-DE   ideal-man
           'Nini has got bored of attending others' weddings, she starts to seek her own ideal man.'
     b.   Ta   <u>pai</u>-lei-le   <u>ma-pi</u>,   zhongyu zhu-kou-le.
           he   pat-tired-PRF   horse-bottom   finally   close-mouth-PRF
           'He flattered somebody so much that he got tired. Finally, he shut up.'

V1 and O also keep the selectional restriction that is found between a verb and its internal argument. The verb for roll call must be *dian* 'point', not *jiao*

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[4] If the V-V cluster is formed by head movement, the movement can be syntactic, since it has interpretation effects (see Harizanov & Gribanova 2019 for syntactic head movement). In the absence of the head movement, the subject of a result predicate cannot be nonspecific, like the subject of a matrix predicate in Mandarin (ia). But in the correlated V-V construction, the subject of the result can be nonspecific (ib) (Zhang 2001: 218). It is possible that in the latter structure, the head movement extends the domain for subject specificity (cf. Tsai 2001, 2008).
(i)   a.   Akiu da   de {na/*yi} ge   xiaohair   haotaodaku.
          Akiu beat   DE that/one CL   kid   cry.loudly
          'Akiu beat that kid such that the kid cried loudly.'
     b. Akiu da-ku-le   yi   ge xiaohair.
        Akiu beat-cry-PRF   one   CL kid
        'Akiu beat a kid such that the kid cried loudly.'

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'call', as in (9a); and the same restriction is seen in the AR in (9a'). The verb *jiao* 'sprinkle' may select *shui* 'water', but not *shazi* 'sand', as in (9b) and the AR in (9b'), consistently.

(9) a.   {dian/*jiao}   ming   a'   {dian/*jiao}-lei-le   ming
          point/call name   point/call-tired-PRF   name
          'roll call'   'get tired from roll calling
     b.   jiao {shui/*shazi}   b'   jiao-lei-le   {shui/*shazi}
          sprinkle water/sand   sprinkle-tired-PRF   water/sand
          'sprinkle water'   'get tired from sprinkling water'

The close semantic relation between V1 and O in AR falsifies Bi & Pan's (2018) analysis of ARs. In their analysis, V1 modifies V2 in their base-positions and the projected V2 complex takes O as complement, as in (10), for our (2b) (see Tomioka 2006, 2010 for a similar head adjunction analysis of Japanese V-V resultatives).

(10) [Yaoyao [$_{VP2}$ [$_{V2}$ wear tired] [$_{DP}$ the shoes]]]   (cf. Bi & Pan 2018: 390)

The modification analysis has another problem: unlike a modifier, V1 is not optional. The AR in (2b) becomes unacceptable if V1 is missing, as seen in (11).

(11) *Yaoyao ni-le   na   shuang   xie.   (cf. (2b))
      Yaoyao tired.of-PRF   that pair   shoe

When two non-adjacent elements give an idiomatic reading or a selection effect, the separation of the base-generated adjacency is caused by movement (e.g., Adger & Ramchand 2005).   Normally, a transitive verb is next to its selected object in their base-positions, and the adjacency is represented as a head-complement sisterhood relation or a Spec-head relation. In either configuration, the two elements are base-generated in the minimal domain of the verb. How are V1 and its O grouped in their base-positions in AR? Although there are quite a lot of research on PR (e.g., Larson 1990: 629; Hornstein & Lightfoot 1987; Ramchand 2008: 122, Baker 2014: 12), very few research has been done on AR (see Williams 2014 for a review).

Let us consider Ramchand's (2008) influential analysis of resultatives. Her analysis has three basic projections: ResP for the predication of a result state, ProcP for the activity that leads to the result, and InitP for hosting an agent. Moreover, the element that occurs in the head Res may move to Proc, and the elements in Proc move further to Init (Ramchand 2008: 128). Assume

that in an AR, the activity-denoting V1 heads ProcP and the result-denoting V2 heads ResP. Moreover, the V-V cluster is derived by head movement (e.g., Sybesma 1999, Zhang 2007) from ResP to ProcP, and the cluster moves further to Init. We thus get the basic structure for the AR in (2b) in (12), where the subject in the ResP is presumably a null element, co-indexed with the agent *Yaoyao*, and the patient of V1 (i.e., O) [the shoes] is base-generated at SpecProcP.[5]

(12) [$_{InitP}$ Yaoyao$_i$ [wear-tired$_k$ [$_{ProcP}$ the shoes <wear-tired>$_k$ [$_{ResP}$ e$_i$ <tired>]]]

In (12), V1 and its patient are indeed base-generated in the minimal domain of ProcP, next to each other, as marked by the shaded parts. However, different from normal transitive verbs, V1 in AR is defective, to be reported in the next section.

3. The reachability differences of V1 in AR and PR

Three tests show that the V1 in an AR is not as reachable as the V1 in a PR. First, V1 can be modified by an agent-oriented adverbial in a PR, but not in an AR. An agent subject is expected to license an agent-oriented modifier, but this expectation is met in PR only, as seen in (13) and (15), but not in AR, as seen in (14) and (16). Instrument and manner modifiers typically do not modify states. They thus may not modify the stative V2 of either PR or AR. The same manner modifier *dakoudakoude* 'greedily' occurs in the PR in (13a) but is rejected in the AR in (14a). The same manner modifier *xiaoxingde* 'carefully' occurs in the PR in (13b) but is rejected in the AR in (14b). Likewise, the same instrument modifier *yong chazi* 'with a fork' occurs in the PR in (15a) but is rejected in the AR in (16a); and the same instrument modifier *yong shuazi* 'with a brush' occurs in the PR in (15b) but is rejected in the AR in (16b).

(13) a. Ta   da-kou-da-kou-de   chi-guang-le   jidan.
         he   big-mouth-big-mouth-DE   eat-empty-PRF   egg
         'He ate up the eggs greedily.'
     b. Ta   hen   xiaoxinde   ca-ganjing-le   naxie   zhaopian.
         he   very carefully   wipe-clean-PRF those   photo
         'He carefully wiped those photos clean.'

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[5] An AR structure similar to (12) is proposed in Zhang (2007), where the null subject of V2 is a PRO, without the semantic labels InitP, ProcP, and ResP.

(14) a.　Ta　(*da-kou-da-kou-de)　　chi-ni-le　　　jidan.
　　　　he　big-mouth-big-mouth-DE　eat-tired.of-PRF egg
　　　　'He had eaten so much egg that he was fed up with it.'

　　b.　Ta　(*hen　　xiaoxinde)ca-ni-le　　　naxie　　zhaopian.
　　　　he　very　carefully　wipe-tired.of-PRF　those　　photo
　　　　'He had wiped those photos so much that he was fed up with them.'

(15) a.　Ta　yong chazichi-guang-le　jidan.
　　　　he　with fork eat-empty-PRF　egg
　　　　'He ate up the eggs with a fork.'

　　b.　Ta　yong shuazi　　xi-ganjing-le　yifu.
　　　　he　with brush　　wash-clean-PRF clothes
　　　　'He washed the clothes clean with a brush.'

(16) a.　Ta　(*yong　　chazi)　　chi-ni-le jidan.
　　　　he　with　　fork eat-tired.of-PRF egg
　　　　'He had eaten so much egg that she was fed up with it.'

　　b.　Ta　(*yong　　shuazi)　xi-fan-le　　　yifu.
　　　　he　with　　brush　　wash-bored-PRFclothes
　　　　'He washed the clothes so much that he got bored.'

Instead of V1 alone, the combination of V1 and V2 of an AR can be modified. For example, *guyi* 'deliberately' is neither a manner nor an instrument modifier. It modifies the whole complex predicate, rather than the V1 *he* 'drink' alone, in (17). Since *guyi* necessarily scopes over V2 as well as V1, this example does not challenge my claim that in a AR, V1 alone cannot be modified.

(17) Ta　dasuan guyi　　　he-zui　　　jiu.
　　 he　plan deliberately　drink-drunk　wine
　　 'He plans to get drunk deliberately.'

Notice that we do not consider the *nong* construction such as (18). Unlike in the ARs under our study (see §1), the clause-final nominal *na ge gushi* 'this story' here is not the direct object of *nong*, as seen in (18b). (18a) does not entail (18b). The form *nong* here functions like a light verb.

(18) a.　Ta　yong yi　ben cidian　　nong-dong-le　　　　na
　　　　he　with one　CL　dictionary make-understand-PRF　that
　　　　ge　gushi.
　　　　CL　story
　　　　'With a dictionary, he got to understand that story.'

b.   *nong   na   ge   gushi
          make   that CL   story

Second, V1 alone can be the antecedent of the proform use of *nong* 'make' in a PR, but not in an AR. In the PR in (19a), V1 is replaced with *nong* in the second clause. In the AR in (20a), however, the parallel replacement is impossible. The acceptability contrast between the PR in (20b) the AR in (20b) shows the same point.

(19) a.   Yaoyao   wan-huai-le   ziji-de   wanju,   Lili ye
           Yaoyao   play-broken-PRF   self-DE   toy   Lili also
           zheyang   nong-huai-le   ziji-de   wanju.
           so   make-broken-PRF   self-DE   toy
           'Yaoyao played her toy such that the toy got broken, and so did Lili.'
b.   Yaoyao   sao-ganjing-le   zjii-de   fangjian, Lili ye
           Yaoyao   sweep-clean-PRF   self-DE   room   Lili also
           zheyang   nong-ganjing-le zjii-de   fangjian.
           so   make-clean-PRF self-DE   room
           'Yaoyao swept her own room clean, and so did Lili.'
(20) a.   Yaoyao   wan-ni-le   ziji-de   wanju,   *Lili ye
           Yaoyao   play-bored-PRF self-DE   toy   Lili   also
           zhe yangnong-ni-le   ziji-de   wanju.
           so   make-bored-PRF   self-DE   toy
           Intended: 'Yaoyao played her toy such that she got bored, and so did Lili.'
b.   Yaoyao   sao-lei-le   ziji-de   fangjian, *Lili ye
           Yaoyao   sweep-tired-PRF self-DE   room   Lili also
           zheyang   nong-lei-le   ziji-de   fangjian.
           so   make-tired-PRF self-DE   room
           Intended: 'Yaoyao swept her own room and got tired, and so did Lili.'

Notice that a generally possible property in PR does not mean that the property is seen in all PR constructions. (21) is a PR (from a reviewer), but the V1 *shao* 'burn' cannot be the antecedent of *nong* in the second clause. What we want to show is that such an antecedent-proform relation is never possible for an AR. There might be some independent account for the unacceptability of (21).

(21) *Zhangsan   shao-hui-le   wanju,   Lisi ye zheyang   nong-
     Zhangsan   burn-destroy   toy   Lisi also so   make-

hui-le   ziji-de   wanju.
destroy   self-DE   toy

Third, V1 can be a "master copy" for the V in the *mei V yi ci* 'each time of V' string in another clause in a PR, as seen in (22a), but not in an AR, as seen in (22b). In (22a), the V1 *ca* 'wipe' is copied, whereas in (22b), the V1 *he* 'drink' cannot be copied.

(22) a.   Wo qu-nian   chuanghu ca-ganjing-le   san ci.
            I   last-year window   wipe-clear-PRF three time
            Mei <u>ca</u>   yi   ci   ta   dou kua   wo.
            each wipe one time he   all   praise   I
            'I wiped the window clean 3 times last year. Each time, he praised me.'
      b.   Wo qu-nian   jiu   he-zui-le   san ci.
            I   last-year wine drink-drunk-PRF   three time
            *Mei<u>he</u> yi   ci   ta   dou ma   wo.
             each drink one time he   all   chide   I
            Intended: 'I got drunk 3 times last year. Each time he chided me.'

If the second *he* were not copied in (22b), the sentence would be fine (✓*Mei yi ci ta dou ma wo*). Also, if the whole V-V cluster *he-zui* 'drink-drunk' were copied in (22b), the sentence would also be fine (✓*Mei <u>he-zui</u> yi ci ta dou ma wo*). The contrast between (22a) and (22b) shows that it is the V1 of a PR, but not that of an AR, that can be targeted in the verb-copying.

The above three contrasts can be further observed in (23). (23a) has either a PR or AR reading (Li 1990: 177).[6] But an AR reading is much harder, if it is ever possible, to be obtained from the other three examples in (23). V1 is modified by *na-zhe gunzi* 'holding a stick' in (23b); V1 is replaced with *nong* 'make' in the second sentence in (23c); and V1 is an antecedent of *zhui* 'chase' in *mei zhui yi ci* 'every time of chasing' in (23d). All of the three examples show that the V1 of AR is less accessible than that of PR to various syntactic operations.

(23) a.   Baoyu   zhui-lei-le   Daiyu.
            Baoyu   chase-tired-PRF   Daiyu
            'Baoyu chased Daiyu so much that Daiyu got tired.'   (PR)

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[6] A third possible reading of (23a) is that 'Baoyu$_i$ caused Daiyu$_k$ to chase him$_i$ such that she$_k$ got tired' (Li 1990). In this reading, the preverbal DP (i.e., *Baoyu*) is not an agent (cf. (5)). We do not discuss the reading here.

'Baoyu chased Daiyu so much that Baoyu got tired.' (AR)

b. Baoyu <u>na-zhe gunzi</u> zhui-lei-le Daiyu.
Baoyu hold-PRG stick chase-tired-PRF Daiyu
'Baoyu chased Daiyu with a stick so much that Daiyu got tired.'
(PR)

c. Baoyu zhui-le-le Daiyu, Liu-Laolao ye
Baoyu chase-tired-PRF Daiyu Liu-Laolao also
zheyang <u>nong</u>-lei-le Daiyu.
so make-tired-PRF Daiyu
'Baoyu chased Daiyu and made Daiyu tired, and Liu Laolao also
did so.' (PR)

d. Baoyu zhui-lei-le Daiyu san ci. Mei <u>zhui</u>
Baoyu chase-tired-PRF Daiyu three time every chase
yi ci, jieguo dou yiyang.
one time result all same
'Three times, Baoyu chased Daiyu so much that Daiyu got tired.
Every time, the result was the same.' (PR)

Summarizing, the V1 of an AR is less accessible than the V1 of a PR, as well as than verbs in their other normal uses, to a modifier, the proform use of *nong* 'make', and an anaphoric verb copy. One can see that the structure in (12) does not reflect this defectiveness of V1 in AR. A new structural analysis is thus called for.[7]

4. Root-like properties of V1 in AR and a new type of NI

A signature property of NI is the close relation between the incorporating verb

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[7] (i) (from a reviewer) is special in that the nominal *zhe ge gushi* 'this story' in the first clause can be the internal argument of both V1 *du* 'read' and V2 *dong* 'understand'. The nominal is not the subject of V2, unlike the O in the ARs discussed in this paper. In (i), we see that the adverbial *kao yi ben cidian* 'with a dictionary' can modify *du*, and *du* can also be the antecedent of *nong* in the second clause. (i) is similar to (ii), which has no V-V cluster, in that the two verbs share both their agent and patient. See Collins (1997, 2002: §6) for an analysis of such construction in other languages. I leave a study of the constructions in Mandarin Chinese to future research.

(i) Wo kao yi ben cidian du-dong-le zhe ge gushi, ta
I with one CL dictionary read-understand-PRF this CL story he
ye kao yi ben cidian nong-dong-le zhe ge gushi.
also with one CL dictionary make-understand-PRF this CL story
'I read and got to understand this story with a dictionary, and do did he.'

(ii) Women zhu tang he.
we cook soup drink
'We'll cook soup for us to drink it.'

and the incorporated nominal, and the relation is seen in the defectiveness of one of the elements. In the classic type of NI, it is the nominal that is defective. In §3, I reported that V1 of AR shows defective properties parallel to those of an incorporated nominal in the classic type of NI.

The defectiveness can be viewed as root-like properties. A compound is derived by root merger. In English, the complex *steel instrument* is a phrase, rather than a compound. Pronominalization of the *instrument* part of the complex is possible (e.g., *I want the steel one, not the plastic one!*). In contrast, the complex *string instrument* is a compound, and pronominalization of the *instrument* part is impossible (e.g., *Which instrument can you play? *I can play the string one, he can play the percussion one*. See Hole 2015: §4.3.3). The inaccessibility of an incorporated noun, as seen in (1b), is similar to a root in a compound.

In Mandarin, verbal compounds such as *chu-ban* 'produce-book => publish' (Chao 1987:132), *dong-yuan* 'move-person => mobilize', and *mian-li* 'give.force-force => encourage' are derived from a root merger. As a compound-internal element, the action-denoting root alone cannot be modified by an element external to the compound. Also, it cannot be replaced by *nong* 'make', as seen in (24b) (cf. (20)); and it cannot be copied in the *mei-V-yi-ci* 'every time of V-ing' construction, as seen in (24c) (cf. (22b)).

(24) a. Tamen   dong-yuan-le   henduo   ren.
         they   move-person-PRF   many   people
         'They mobilized many people.'
    b. *Women ye   zheyang   <u>nong</u>-yuan-le   henduo   ren.
          we   also so   make-person-PRF   many   people
    c. Mei   <u>dong</u>*(-yuan) yi   ci,   dou hen mafan.
         every   move-person   one time all   very troublesome
         'Every time of the mobilization, it was troublesome.'

The V1 of AR exhibits the restrictions similar to an action-denoting root in a compound (see (20), (22b)), different from a normal transitive verb, including V1 of PR (see (19), (22a)).

On the other hand, the O in an AR does not have the restrictions found in many incorporated nominals in the classic type of NI. It can have a demonstrative, as seen in (2b). It can be an antecedent of a pronoun, e.g., (2b) can be followed by (25), where *ta* 'it' means the pair of shoes. It can also move as a topic, as seen in (6), while an incorporated nominal may not move in the classic type of NI (Dobrovie-Sorin et al. 2006: 63). Also, if the O is indefinite, it may have a wide-scope reading, as well as a narrow-scope reading, as seen in (26).

(25) Ta   yushi   jueding   ba   ta   reng-diao.
     she   then   decide   BA   it   throw-off
     'She then decided to throw it away.'
(26) Mei   ge   haizi dou chang-fan-le   yi   shou ge.
     every   CL   kid   all sing-bored-PRF   one CL   song
     'Every kid sang a song and got bored with it.'   ($\forall>\exists$; $\exists>\forall$)

　　　Therefore, root-like properties are seen on an incorporated nominal in the well-studied type of NI, but on the V1 of AR. I thus identify the semantic grouping of V1 with O in AR as a new type of NI, in which it is the incorporating verb that exhibits root-like properties, although the grouping is not a root merger (see the differences in the next section).

　　　In addition to the root-like properties of one of the two elements (i.e., incorporating verb and the incorporated nominal), shared properties of these two types of NI include the following. First, a complex constituent is formed in the classic NI (e.g., *strawberry-picking*), and so is in the semantic grouping of V1 and O in AR (§2). Second, unlike roots, which are not categorized, both two elements in the two types of NI are categorized elements: a verb and a nominal. Like a regular transitive verb, V1 c-selects O in AR. In this sense, both types of NI are different from Wiltschko's (2009) and John's (2007) root-incorporation in some languages. Also, in both cases, it is the verb, not the nominal, that heads the complex. Third, an incorporated nominal can be a phrase (Massam 2001; Dayal 2011), and so is the O in AR. Fourth, an incorporated nominal and an incorporating verb can be separated in their surface positions (Dobrovie-Sorin et al. 2006: 62; Dayal 2011: 137; Baker 2014), and so are the O and V1 in AR. Fifth, an incorporating verb is never a verb of change of state (Johns 2007: 542), such as *die, freeze, or melt*, so is V1 of a resultative, which must denote an activity. All of these shared properties are compatible with my claim that the V1-O grouping in AR is a type of NI, parallel to the classic type of NI.

　　　Next, in §5, I provide my syntactic analysis of this special type of NI, explaining the root-like properties of the incorporating verb. Then in §6, I present a semantic analysis, showing how this type of NI is different from the familiar type of NI.

5. A syntax of AR: early merger of V1 with O

In this section, I present a comparative syntax of AR and PR constructions. Recall Ramchand's (2008) three basic projections of resultatives: ResP, ProcP, and InitP. The PR in (27a) (= (2a)) can have the structure in (27b), where the

post-verbal DP *na shuang xie* 'that pair of shoes' is base-generated as the subject of ResP. Moreover, as in Ramchand (2008: 128), the subject of the ResP moves to SpecProcP; the head of ResP moves to the head of ProcP, and moves further to the head of InitP. In (27b), [the shoes] moves out of ResP, the head of ResP [broken] moves to Proc, which is already realized by [wear], and then the complex verbal cluster [wear-broken] moves further to the head of InitP (see Zhang 2017: 400 for a similar structure for a PR).

(27) a. Yaoyao   chuan-po-le   na   shuang   xie.   (PR)
          Yaoyao   wear-broken-PRF   that pair   shoe
          'Yaoyao wore that pair of shoes so much that it got broken.'

   b. [$_{InitP}$Yaoyao [$_{Init'}$wear-broken$_k$ [$_{ProcP}$ the shoes$_g$ [$_{Proc'}$<wear-broken$_i$>$_k$ [$_{ResP}$ <the shoes>$_g$ <broken$_i$>]]]]]

Recall that if we analyse AR in a similar way, as in (12), we are not able to account for the accessibility contrast of V1 between AR and PR. In the PR structure in (27b), the V1 *chuan* 'wear' heads ProcP, and is merged with the ResP directly. It is possible that the V1 in AR is in a different syntactic position. I assume that V1 and O may form a constituent first in AR. Specifically, I assume that there are two working sites, A and B (cf. Piggott & Travis 2013: 168). The major steps of the derivation of (28) (= (2b)) are in (29). The affected parts in each step are shaded in (29b) through (29e). In step (29a), V1 and O are grouped in site A; and V2 and its null pronominal subject e$_i$ are base-generated respectively as the subject and the head of the predicate of ResP in site B. In step (29b), V2 moves from site B to V1 in site A. The mode of the sideward movement from one site to another is argued for in Nunes (2001, 2004), Hornstein (2001), Nunes & Uriagereka (2000), and Bošković (2018), among others. In step (29c), the remnant ResP is merged with a null functional head Proc, in site B. In step (29d), the structure built in site A, i.e., VP1, is merged to the structure in site B, as SpecProcP. Finally, in step (29e), ProcP is merged with a null Init head, and then the agent *Yaoyao* is also integrated into the structure, as SpecInitP.

(28) Yaoyao   chuan-ni-le   na   shuang   xie.   (AR)
     Yaoyao   wear-tired.of-PRF that pair   shoe
     'Yaoyao wore that pair of shoes so much that she got tired of it.'

(29)   *Working site A* || *Working site B*

   a.   V1 is merged with O || ResP headed by V2 is built
        [$_{VP1}$ wear [$_{DP}$ the shoes]] || [$_{ResP}$ e$_i$ tired.of]

b. V2 adjoins to V1 from site B to site A (sideward movement)
[$_{VP1}$ [$_{V1}$wear-tired.of] [$_{DP}$ the shoes]]   ‖   [$_{ResP}$ e$_i$ <tired.of>]

c.   ‖ ResP is merged with a null Proc
[$_{Proc'}$ ∅ [$_{ResP}$ e$_i$ <tired.of>]]

d. VP1 in site A is merged to the structure in site B, as Spec of ProcP
[$_{ProcP}$ [$_{VP1}$ [$_{V1}$wear-tired.of] [$_{DP}$ the shoes]][$_{Proc'}$ ∅ [$_{ResP}$ e$_i$ <tired.of>]]

e. ProcP grows into InitP, integrating the agent, in site B
[$_{InitP}$Yaoyao$_i$[$_{Init'}$∅[$_{ProcP}$[$_{VP1}$wear-tired.of the shoes][$_{Proc'}$∅[$_{Resp}$ e$_i$ <tired.of>

In this derivation of the AR, the V1-O grouping occurs as an early merger of V1 and its internal argument, as seen in (29a) in the working site A, and the formed V1-O complex is split in a later step, as seen in (29b). Moreover, the null subject *e* in ResP can be a PRO, which takes the agent *Yaoyao* as its antecedent. The theme of V1, since it is embedded in VP1, does not c-command the PRO. Thus, an AR reading is achieved.

The early merger of V1 with O in AR can be compared with the root merger of a transitive root with a theme root. In both the V1-O grouping and a root merger, the merger operation occurs before any other syntactic operations applying to the action-denoting element. For AR, V1 "is locked" inside a low Spec position, not local to any elements higher than the theta-domain (i.e., the first phase in Ramchand 2008: 16). For a compound, a root "is locked" in a pre-categorized position. Both exhibit syntactically defective properties (§3, §4). This explains the root-like properties of V1 of AR: it may not have its own modifier, be replaced by the proform *nong* and function as an antecedent of verb-copying, in another clause. In contrast, the V1 in a PR is first merged with a ResP, rather than a nominal (see (27b)). Thus, there is no V1-O early merger in a PR.

But the two types of early merger are different. The two parts of the V1-O grouping in AR are both categorized, and thus they are syntactically visible: V1 can be adjoined by V2 when VP1 is still independent, as seen in (29b); the O can be topicalized, as seen in (6); and the O may have a wide-scope, as seen in (26). None of these is possible for a root. For example, *chu* and *ban* in *chu-ban* 'produce-book => publish' cannot be split by any element, and *ban* cannot be topicalized. We thus see that the newly identified type of NI is between a normal V-O combination and root merger with respect to the syntactic

accessibility of the components. Sadock (1980) also extensively argues that NI is a syntactic phenomenon, not compounding.

Note that we do not claim that the combination of a verb and its object must be NI in Mandarin. The defectiveness of V1 is seen in AR only. The derivation in (29) is also for AR only. If a verb does not occur with a result predication, it never surfaces inside a low Spec.

In this section, I have explained the root-like properties of V1 in AR by the verb's special syntactic position: it is inside a low Spec in the theta-domain.

6. A semantics of AR: early saturation of V1 by O

We now compare the semantics of the verbs in three constructions: the incorporating V in the familiar type of NI, V1 of PR, and V1 of AR. Adopting Parsons (1990), we assume that a verb is a predicate of events and each participant of an event is also a predicate of the event. In Chung & Ladusaw (2004), Dobrovie-Sorin et al. (2006), and Dayal (2011), among others, a property-denoting nominal is combined with the incorporating verb directly. A neo-Davisonian semantics of *watch* in the NI expression *bird-watching* can be (30) (see Dayal 2011: 146; cf. Dobrovie-Sorin et al. 2006: 69). *P* is for the property denoted by the incorporated nominal, e.g., *bird* in *bird-watching*. The subscripts *et, e*, and *v* represent the semantic types of property, entity, and event, respectively. As in Kratzer (1996), the external argument, which is introduced via a functional voice projection, is out of the verb's argument structure.

(30) In the NI *bird-watching*:
    $[[watch]] = \lambda P_{et} \lambda e_v [P\text{-watch}(e)]$,
    where $\exists e [P\text{-watch}(e)] = 1$ iff $\exists e'[watch(e') \& \exists x[P(x) \& Theme(e') = x]]$

In (30), first, a nominal and a verb are combined before each takes an event argument. Second, both the incorporating verb and the incorporated nominal are property-denoting, and thus the combination of *P-watch* is predicate modification (Dobrovie-Sorin et al. 2006: 68) or Chung & Ladusaw's (2004) Restriction, in contrast to the normal Saturation of a verb by its internal argument. Since the incorporating verb is not saturated, the verb complex derived by the NI may still take another object in some languages. For example, as shown by Chung and Ladusaw (2004: 6), the NI complex [dog-feed] may take the object [Fido], forming the construction [John dog-feed Fido] in some languages (although not in English) (the so-called classifier incorporation; see Mithun 1984: 864; Baker 1995: 10; Carlson 2003: 200-

201).[8]

As for the V1 of a PR, which represents the normal use of a verb, I assume that the V1 *chuan* 'wear' of the PR in (2a) has the semantics in (31). In this structure, first, the V1 *chuan* 'wear' is not combined with a nominal directly. It is free to take an event argument directly. Thus, there is no NI of any kind in the derivation. Second, the theme nominal *na shuang xie* 'that pair of shoes' denotes an entity, rather than a property; and thus it is able to saturate the transitive verb.

(31) In the PR *chuan-po-le na shuang xie* 'wear-broken that pair of shoes':
$[[chuan]] = \lambda x_e \, \lambda e_v \, [wear(e) \, \& \, Theme(e) = x]$
where $\exists e \, [wear(e)] = 1$ iff $\exists e' \, [wear(e') \, \& \, \exists x \, [Theme(e') = x]]$

The V1 *chuan* 'wear' of the AR in (2a), however, can have the semantics in (32).

(32) In the AR *chuan-ni-le na shuang xie* 'wear-tired.of that pair of shoes':
$[[chuan]] = \lambda x_e \, \lambda e_v \, [x\text{-}wear(e)]$
where $\exists e \, [x\text{-}wear(e)] = 1$ iff $\exists e' \, [wear(e') \, \& \, \exists x \, [Theme(e') = x]]$

In (32), first, a nominal and a verb are combined before each takes an event argument. Second, different from the incorporated nominal in (30) but similar to the theme nominal in (31), the combined nominal is not property-denoting. Thus, the semantic grouping of V1 and O is not predicate modification or Restriction. Instead, V1 of AR is saturated by the nominal via Function Application, before any other semantic operation applies to the verb. The early Functional Application applying to V1 and O in AR matches their early syntactic merger in site A in (29a). Consequently, no additional internal argument for V1 or for the combination of V1 and O is allowed in AR, as seen in (33). This is different both from the compound seen in (24a), where the compound verb *dong-yuan* 'move-person' has the object *henduo ren* 'many people', and from the NI construction [John dog-feed Fido] in some languages mentioned above.

(33) Yaoyao   chi-bao-le   fan (*jiaozi).   (cf. (3b))
      Yaoyao   eat-full-PRF   meal dumpling
      'Yaoyao ate the meal and as a result she was full.'

---

[8] In addition to this early merger derivation, we do not exclude head movement and other kinds of dependencies in deriving some other types of NI (see, e.g., Mithun 1984, Baker et al. 2005, Johns 2017, and Olthof 2020, for various kinds of NI constructions).

In both the type of NI in (30) and the type of NI in (32), an early merger of a verb and a nominal occurs, syntactically. Semantically, the early merger of the former type applies to two property-denoting elements, and thus has the effect of an early Restriction; but the early merger of the latter type applies to a verb and a non-property-denoting nominal, the nominal saturates the verb, and thus the merger has the effect of an early Saturation. Thus, not all types of NI are Restriction (cf. Chung & Ladusaw 2004). NI can be characterized as an early operation of either restriction or saturation. The issue of timing is important.

Since the saturation in this new type of NI is an early saturation, it is different from the one in other constructions, in a neo-Davisonian semantic perspective (Parsons 1990). In this perspective, every theta-role has its own event argument, and its combination with a verb in the normal use can be implemented via a generalized predicate modification, instead of early saturation.

We have presented the semantic differences of V1 in AR and PR. The contrast that V1 shows root-like properties in AR but not in PR thus has semantic correlations. As pointed out by a reviewer, however, the properties are expected to be explained syntactically, as we did in §5. Also, note that we do not make any new claims on the semantics of other parts of a resultative construction. For example, the semantic combination of the activity-denoting ProcP and the result-denoting ResP, which correlates with the syntactic step in (29c), can be implemented via an operation such as a generalized predicate modification or Kratzer's (2005) Event Identification.

7. Conclusions

The semantic connection of the V1 and O in AR shows that they are local to each other in their base-positions. Moreover, compared to other constructions, V1 in AR shows a weak reachability. The weak reachability of the verb is parallel to that of an incorporated nominal in the familiar type of NI: e.g., no modification and no anaphoric linking to a proform. The reachability restriction in both cases is similar to that on a root in a compound, which occurs in a pre-categorizing domain and thus is not accessible to syntactic operations. I have argued that V1 and O in AR undergo an early merger, and consequently, V1 is away from a head position in the clausal spine. This causes the verb hard to be reached by other elements external to the theta-domain. Semantically, two types of NI are distinguished: an early restriction type and an early saturation type. The latter type is identified here, for the first time.

Acknowledgments

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