Distinguishing resultative constructions from small clause constructions

Yehao Hu · Gong Cheng

Abstract This article shows that resultative constructions and small clause constructions are structurally parallel to each other. On the one hand, drawing mainly on data from Mandarin Chinese, it argues for a small clause analysis of resultatives. On the other hand, building on the previous work by the constructivist approach, it proposes that the verbal roots involved in both resultatives and small clause constructions should be treated as event modifiers. The two constructions should involve the same basic syntactic structure in narrow syntax. Their different configurational meanings or event structures are attributed to their different compositional semantics at the C-I interface. For instance, the little v can be interpreted differently at the interface, although no different "flavors" of it are posited in narrow syntax. The conclusions achieved in this article instantiates the idea developed in Marantz (2013) and Wood and Marantz (2017) that syntax is autonomous from semantics: the same syntactic structure might express different meanings.

Keywords Resultative construction · Small clause construction · Small clause · Event modifier · Attitude ascription · Autonomy of syntax · Result state

1 Introduction

Broadly speaking, current understanding of argument structure within generative linguistics has witnessed a turn from the lexicalist/projectionist approach to the generative-constructivist approach ever since Hale and Keyser (1993) (cf. Marantz 2013:154; Ramchand 2008:1-11). Being predominant within Government and Binding theory, the lexicalist approach assumes the argument structure, as part of the information stored with verbs, to be "projected" from the lexicon via various linking rules, among them the most well-known "Uniformity of Theta Assignment Hypothesis" (UTAH). The constructivist approach, as opposed to the lexicalist approach, highlights the role of syntax in the expression of the argument structure. Represented by such theories as the Exo-Skeletal Model (see, e.g., Borer 2005) and Distributed Morphology (Halle and Marantz 1993; Marantz 1997), this line of research has gained considerable support and success in recent years, especially in explaining language facts related to verb frame alternations.

   When it comes to the research topics in argument structure studies, resultative constructions, as illustrated by (1), have always been a hotly debated one at least since Simpson (1983), as they relate closely to the issue of how argument structure is fundamentally constructed.

(1)   John hammered the metal flat.

One of the research questions about the syntactic structure of resultatives is whether they contain a small clause or not. Both small clause analysis and non-small clause analysis have been proposed. Studies that propose a small clause analysis of resultatives include Hoekstra (1988), Sybesma (1999), Kratzer (2005), Harley (2005, 2008), and Marantz (2013); non-small clause analyses can be found in Rothstein (2004), Embick (2004), Williams (2015), and Bruening (2018).
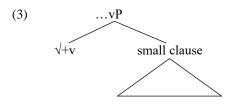
   Yet, there haven't been any studies that go further and ask the following questions. Do resultatives have exactly the same structure as those that are canonically assumed to contain a small clause (call them small clause constructions[1]), as represented by (2)? If yes, then how do they differ?

(2)   John considers Mary (as) intelligent.

The answers to the questions above could have interesting consequences and might help us get a better understanding of argument structure-related issues. Therefore, building on the previous work by the constructivist approach, this article will make a comparison between resultative constructions and small clause constructions both syntactically and semantically. And drawing on data from both English and Mandarin Chinese, it will argue that they involve the same basic syntactic structure in narrow syntax, roughly as follows, but are interpreted differently at the C-I interface, a conclusion that has never been

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[1]See Section 2.2 for the precise definition of small clause constructions that this article is concerned with.

drawn before.

(3)

The remainder of this article is organized as follows. Section 2 delimits the two constructions in both English and Mandarin Chinese, laying the groundwork for discussions that follow. In justifying the idea that resultatives and small clause constructions have the same basic syntactic structure, Section 3 argues for two key aspects of syntactic parallelism between them: both constructions contain a small clause and have their verbal roots as event modifiers. Section 4 illustrates the syntactic structures and derivations involved in the two constructions, and lays out a postsyntactic analysis of the particles involved in the relevant constructions in Mandarin Chinese. Section 5 outlines the different compositional semantics of the two constructions, and makes a few comments on the way that semantic computation works at the C-I interface. Section 6 shows how the result state can be modified in such constructions as lexical causatives/inchoatives in English, compound resultatives in Mandarin Chinese, and constructions containing pseudo-resultatives in English. Section 7 concludes.

2 Delimiting resultatives and small clause constructions in English and Mandarin Chinese

Resultative constructions and small clause constructions, as illustrated by (1) and (2) respectively in Section 1, both comprise necessarily two overt predicates[2] and one theme DP in their surface forms. Of those two predicates, one is the primary predicate, usually a verb, and the other is the secondary predicate, which can be of various syntactic categories. In this section, we'll present the relevant resultative constructions and small clause constructions in English and in Mandarin Chinese, which will provide the major empirical basis for arguments of this article, and specify the respective properties of these two constructions that are particularly relevant to our discussion.

2.1 Resultative constructions

Resultative constructions are canonically interpreted as expressing a (caused) change of state or location[3], resulting from the action denoted by the primary predicate, that the referent of the theme DP has undergone. As with English, resultatives in Mandarin Chinese, such as compound resultatives (henceforth ComRes) illustrated below, have also "enjoyed the continuous attention of researchers over the last several decades."[4] (Huang 2006:1)

Resultative constructions in English
(4)   a.   John [Pr1 hammered] [Theme DP the metal] [Pr2 flat][5]. (from (1))

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[2]The term "predicate" is used in an informal sense here. Technically, it could be an event modifier. See the following discussions.

[3]We do not make a distinction between resultative constructions and the so-called "directed-motion constructions" in this article, assuming that they are "two manifestations of the same underlying phenomenon." (Folli and Harley 2006:122)

[4]The V-*de* construction in Mandarin Chinese, as illustrated by (i), is also considered as a kind of resultative.

(i)   Zhangsan ku-de   shoupa   dou shi le. (Huang 2006:1)
        Zhangsan cry-till handkerchief all   wet LE
        'Zhangsan cried (so much that) even the handkerchief got wet.'

For reasons of space, we'll put it aside. But the relevant language facts about resultatives, which are used as evidence for the proposals of this article such as satisfying the DOR (see Section 3.1.1) and allowing syntactic alternations (see Section 3.1.2), and the conclusions drawn in this article about resultatives should both apply to V-*de* construction.

[5]In this article, the primary predicate of either resultative constructions or small clause constructions will be notated

b. I cooked the meat to a cinder. (Simpson 1983:143)

c. I painted the car a pale shade of yellow. (Simpson 1983:143)

(5) a. He washed the soap out of his eyes. (Hoekstra 1988:101)

b. I cried my eyes blind. (Simpson 1983:146)

ComRes in Mandarin Chinese

(6) a. Zhangsan [Pr1 **da**]-[Pr2 **sui**]-le[6]   [Theme DP huaping].
   Zhangsan   hit-into.pieces-LE   vase
   'Zhangsan broke the vase into pieces.'

b. Zhangsan **ca-gan**-le   boli. (Sybesma 1999:69)
   Zhangsan   wipe-dry-LE glass
   'Zhangsan wiped the glass dry.'

(7) a. Zhangsan **chang-ku**-le Lisi.
   Zhangsan   sing-cry-LE   Lisi
   'Zhangsan made Lisi cry by singing.'

b. Zhangsan **ku-shi**-le   shoupa. (Huang 1992:125)
   Zhangsan   cry-wet-LE handkerchief
   'Zhangsan cried the handkerchief wet.'

c. na-ge xiaohua **xiao-feng**-le   Lisi.
   that-CL joke   laugh-mad-LE   Lisi
   'That joke got Lisi mad from laughing.'

ComRes in Mandarin Chinese have a different surface form from resultative constructions in English, because in the former, the primary predicate and secondary predicate are combined together to form a compound[7], namely, resultative compound, such as *da-sui* 'hit-into.pieces' in (6a), *ca-gan* 'wipe-dry' in (6b), *chang-ku* 'sing-cry' in (7a), *ku-shi* 'cry-wet' in (7b), *xiao-feng* 'laugh-mad' in (7c).

Two properties about resultative constructions both in English and in Mandarin Chinese can be identified. On the one hand, they are highly productive. By the term "productive", we mean that they could license a productive number of verbs as the primary predicate. Even unergatives could function as the primary predicate of resultatives, such as *cry* in (5b), *ku* 'cry' in (7b), *xiao* 'laugh' in (7c). On the other hand, the theme DP does not necessarily bear any semantic relations to the primary predicate, such as (5a-b) in English, and (7a-b) in Mandarin Chinese, although this is relatively less common in English (see Simpson 1983). In ComRes, even the external argument[8] sometimes does not establish any semantic relations with the primary predicate, such as (7c) (cf. Williams 2002).

As can be observed from the English examples above, the secondary predicate of resultative constructions can be aP, PP, or nP. In English, whereas aPs are most commonly used as secondary predicates of resultative constructions, nPs are the least common[9]. But this is not the case in Mandarin Chinese, however. Mandarin Chinese abounds with resultative constructions with an nP/DP secondary predicate (henceforth Res(nP/DP)), although the transitive ones[10] mostly use *ba*-constructions[11], as

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as *Pr1*, and the secondary predicate as *Pr2*.

[6]There are two *le*s in Mandarin Chinese (see Tsai 2008, among many others): the verb-*le* (often glossed as *le*[1]) as in (6a), which adjoins to a verb on the right, and the sentence final particle *le* (often glossed as *le*[2]) as in the example (i) in footnote 4. The verb-*le* is often referred to as Aspect marker in the literature. But see Section 6.1 for another role it is likely to play.

[7]We'll argue in Section 6.2 that this is done via head movement.

[8]Unless specified, the term "external argument" used in this article refers to the external argument of a vP, not that of a nonverbal predicate.

[9]Simpson (1983:153) states that "It must be mentioned that adjectives are the category most commonly used as resultatives. Nominals are the least common."

[10]"Transitive resultative construction" refers to one with an external argument. See Section 3.1.2 for intransitive resultatives (the non-Voice-variants) in Mandarin Chinese, where the theme DP raises to the matrix subject position to be assigned nominative Case.

[11]We take *ba* as the functional head of Voice, responsible for introducing the external argument (see Kratzer 1996). And We assume that the corresponding *ba*-counterparts have essentially the same syntactic structure as their non-*ba*-variants, except that the derivation of the former does not involve head movement to Voice in narrow syntax. See the analysis in Section 4.

illustrated below[12].

(8)   a.   ***Non-ba-variant***
          renmin [Pr1 xuanju] [Theme DP ta] wei [Pr2 zongtong][13].
          people   elect   he   for   president

    a'. ***Ba-variant***
          renmin ba [Theme DP ta] [Pr1 xuanju]-wei [Pr2 zongtong].
          people   BA   he   elect-for   president
          Both a and a': 'The people elected him (as) president.'

    b. ***Non-ba-variant***
          ta ganggang jia wo (wei) haoyou.
          he just   add I   for   friend

    b'. ***Ba-variant***
          ta ganggang ba wo jia-**cheng/zuo/wei**[14] haoyou.
          he just   BA I   add-CHENG/as/for   friend
          Both b and b': 'He just added me as a friend.'[15]

    c. ***Ba-variant***
          zhengfu   ba zhe-zuo chengshi dazao-cheng/wei-le   jingji-zhongxin.
          government BA this-CL   city   develop-CHENG/for-LE economy-center
          'The government developed this city into an economic center.'

    d. ***Ba-variant***
          wo ba yifu   bao-(cheng/zuo)-le   yi-ge   hen xiao-de   baofu.
          I   BA clothes pack-(CHENG/as)-LE one-CL very small-DE bundle
          'I packed the clothes into a very small bundle.'
          ((8d) adapted from Sybesma 1999:147)

    e. ***Ba-variant***
          ta ba zheli-de shui xi-cheng-le   lvse.
          he BA here-DE   water wash-CHENG-LE green
          'He changed the color of the water here into green by washing (clothes).'

    f. ***Ba-variant***
          ta ba ziji-de xiezi pao-cheng-le   polan-er.
          he BA self-DE shoe   run-CHENG-LE rags
          'He ran his shoes into rags.'

    g. ***Ba-variant***
          na-ge xiaohua ba Lisi xiao-cheng-le   fengzi.
          that-CL joke   BA Lisi laugh-CHENG-LE mad.person
          'That joke changed Lisi into a mad person by making him laugh.'

Transitive Res(nP/DP)s, as illustrated above, convey the sense of "causation" typical of canonical transitive resultatives, with the nP/DP predicate (secondary predicate) describing the end state that holds of the referent of the theme DP. The meaning of causation is particularly noticeable when the subject and the matrix verb (primary predicate) do not constitute any predication relation: the subject is just the "causer." This is illustrated by (8g). Compare it with the ComRes (7c).

    Res(nP/DP) has both of the two properties that we have attributed above to canonical resultatives, either in English or in Mandarin Chinese. On the one hand, no predication relation is necessarily established between the primary predicate and the theme DP, such as (8e-f). On the other hand, Res(nP/DP) is also highly productive and the primary predicate could also be an unergative, as in (8f-g).

    Compared with ComRes, to the best of our knowledge, Res(nP/DP)s in Mandarin Chinese received

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[12]As shown in the examples, the matrix verbs, functioning as the primary predicate of Res(nP/DP)s, can be either bi-morphemic or mono-morphemic, the latter including those in (8b-b') and (8d-g). Those bi-morphemic ones seem to be mostly what Li (1990:190) calls "AND-compounds", which "are always composed of either two morphemes with basically the same meaning" such as *xuan-ju* 'choose-recommend' in (8a-a') and *da-zao* 'forge-build' in (8c), or "with the 'opposite' meanings."

[13]Dowty (1979:93) also assumes the English counterpart of (8a), which Matushansky (2019) calls "denominative", to be a resultative construction, such as "elect John chairman".

[14]Of the three particles here, *zuo* and *wei* are the counterparts of *as* and *for* in English respectively, and *cheng* will be analyzed as the phonological exponent of the little v in Section 4.2. The slash "/" is used to show alternatives. That is, the particles on either side of it can be used grammatically, but not simultaneously.

[15]That is, 'he made me a friend of his (e.g., on Facebook) by the action of adding.'

little attention in the past literature, except for Sybesma (1999) who names the *ba*-variants involved in the examples above "NP-resultative *ba*-sentences" (Sybesma 1999:147). But they will make up a crucial part of the empirical evidence for arguments of this article.

2.2 Small clause constructions

The term "small clause construction" (henceforth SC construction) is intended to cover cases where an actual small clause is used as the complement of a verbal predicate[16]. The concept of "actual small clause" is described by Bruening (2018:549) in the following terms. "By *actual small clause*, I mean a clause that is clearly a constituent and is clearly a self-contained proposition but does not include inflectional material like tense…" (italics original)

Canonical SC constructions, both in English and in Mandarin Chinese, can be roughly divided into four types according to the types of matrix verbs (primary predicate) involved in them, namely, attitude-type SC construction, speech-type SC construction, perception-type SC construction, and raising SC construction, as illustrated by the following examples respectively[17].

(9) ***Attitude-type SC construction in English and Mandarin Chinese***
    a.   Mary [$_{Pr1}$ **considers**] [$_{SC}$ [$_{Theme\ DP}$ him] (as) [$_{Pr2}$ a fool]].
    b.   I **believe** [$_{SC}$ him guilty].
    c.   I **expect** [$_{SC}$ that man off my ship]. (adapted from Bruening 2010:524)
    d.   Zhirinovsky **wants** [$_{SC}$ reformers out of the parliament]. (Svenonius 1994:90)
    e.   wo **dang**   [$_{SC}$ ta shagua]. (Tang 1998:142)
        I consider   he fool
        'I consider him a fool.'
    f.   Zhangsan **xian**   [$_{SC}$ wo zang]. (Liu 2010:1034)
        Zhangsan disfavor   I dirty
        'Zhangsan disfavors me for being dirty.'

(10) ***Speech-type SC construction in Mandarin Chinese***
    a.   wo xiao shihou chang **cheng** [$_{SC}$ ta (zuo/wei) shufu].
        I small time often address he as/for uncle
        'I used to address him as uncle when I was a child.'
    b.   ta-de shouxia dou **han** [$_{SC}$ ta (zuo/wei) dage].
        he-DE minion all shout he as/for big.brother
        'All of his minions call him Big Brother.'
    c.   dajia qinqie-de **chenghu**[18] [$_{SC}$ ta (wei) Xiaozhang].
        people affectionate-DE call he for little.Zhang
        'People affectionately call him Xiaozhang.'
    d.   Zhangsan **xiao** [$_{SC}$ ni sha]. (Liu 2010:1033)
        Zhangsan deride you silly
        'Zhangsan derided you as being silly.'
    e.   Zhangsan **ma** [$_{SC}$ ni ben]. (Liu 2010:1033)
        Zhangsan scold you stupid
        'Zhangsan criticized you for being stupid.'
    f.   Zhangsan **kua** [$_{SC}$ wo congming]. (Liu 2010:1033)
        Zhangsan praise I smart
        'Zhangsan praised me for being smart.'

(11) ***Perception-type SC construction in English***
    Kim **saw** [$_{SC}$ Sam mad]. (Matushansky 2019:66)

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[16]We will leave aside absolute constructions as well as cases where SCs are used as the subject, as illustrated by (ia-b) respectively.

(i)   a.   With [$_{SC}$ John sick], we'll never get the job done on time. (Matushansky 2019:66)
       b.   [$_{SC}$ Maxwell in a dress] is a sight to see! (adapted from Bruening 2018:549)

[17]See Section 5.1 for a brief analysis of English copular constructions, some of which are also assumed to belong to SC constructions.

[18]The primary predicates of SC constructions in Mandarin Chinese are mostly mono-morphemic but can also be AND-compounds, such as *cheng-hu* 'address-call' in (10c), just as with Res(nP/DP)s.

(12)   ***Raising SC construction in English***
       John **seems** [sc ~~John~~ mad].

The first type, attitude-type SC constructions, involves verbs that are often called propositional attitude verbs (see Heim and Kratzer 1998; Coppock and Champollion 2021; Kearns 2011; Svenonius 1994), such as *consider*, *believe*, *expect*, and *want* in English as well as *dang* 'consider' and *xian* 'disfavor' in Mandarin Chinese. These verbs are known to be able to create a propositional attitude context so that quantifiers in this context are likely to show scopal variations (see Coppock and Champollion 2021; Kearns 2011). This type of SC constructions expresses the semantics of attitude ascription. Specifically, it "ascribe[s] to the matrix subject an epistemic state where a predicational relation obtains" between the theme DP and the secondary predicate (Marelj and Matushansky 2015:46). To put it more simply, the referent of the matrix subject DP "is said to hold a proposition [as encoded by the actual SC] in mind as a thought of a certain kind, such as a hope, belief, or desire." (Kearns 2011:137)

   The matrix verbs of the second and third type are respectively verbs of speech (see Tang 1998), as illustrated by the Chinese examples in (10), and verbs of perception. Hence their names speech-type SC construction and perception-type SC construction.

   Different from the first three types of SC constructions, which all contain an external argument and mark the theme DPs as accusative Case, the last type, namely raising SC construction, is intransitive and does not have an external argument. As shown by the notation in (12), the theme DP raises to the matrix subject position to be assigned nominative Case. Note that raising SC constructions, as exemplified by (12), convey a strong sense of subjective judgement, similar to attitude-type SC constructions. The difference is that the judgement is made by the speaker in the former but by the referent of the matrix subject DP (external argument) in the latter.

   As shown in the examples above, whereas the secondary predicates of SC constructions in English can be aP, nP/DP, and PP, in Mandarin Chinese they are mainly aP, as in (9f) and (10d-f), or nP/DP, as in (9e) and (10a-c). We will refer to SC constructions with an nP/DP secondary predicate as SCcon(nP/DP)s, and those with an aP secondary predicate as SCcon(aP)s[19].

   In line with Uniformity Principle[20], we will assume that resultative constructions and SC constructions in Mandarin Chinese, as introduced in this section, have basically the same syntactic structures as their respective English counterparts. And in the following discussions, language facts in both Mandarin Chinese and English will be used as testaments to proposals of this article.

3 Syntactic parallelism between resultatives and SC constructions

This section is devoted to exploring the syntactic parallelism between resultative constructions and SC constructions. To be specific, 3.1 provides evidence that the syntactic structure of resultatives should

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[19]Tang (1998:142) notes that "Some researcher even denies the existence of small clauses in Chinese…" We will follow Tang (1998) in assuming that Mandarin Chinese does have SC constructions. And those Chinese examples listed above, either SCcon(aP)s or SCcon(nP/DP)s, all belong to SC constructions, as they have properties that favor treatment of the embedded clauses as SCs instead of as full clauses. On the one hand, whereas gradable adjectives could occur in bare forms as secondary predicates of SCcon(aP)s, they could not occur as predicates in matrix-level full clauses unless they are modified by degree adverbs (see Grano 2012; Liu 2010), as shown by the contrast below.

(i)   Zhangsan   xian   ni   ben.
       Zhangsan   disfavor   you   stupid
       'Zhangsan disfavors you for being stupid.'

(ii)   a.   ??ni   ben.
                you   stupid
             'You are stupid.'
       b.   ni   hen   ben.
            You   very   stupid
            'You are very stupid.'

On the other hand, as shown above, the Chinese counterparts of such particles as *as* and *for*, which often appear in English SC constructions, can also be found in SCcon(nP/DP)s in Mandarin Chinese. Furthermore, transitive SCcon(nP/DP)s in Mandarin Chinese allow such syntactic alternations as *ba*-alternation and Voice alternation (see Section 3.1.2), which would be unexpected if the embedded complement is a full clause.

[20]"In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances." (Chomsky, 2001:2)

involve an SC, just like that of SC constructions; 3.2 argues that verbal roots involved in SC constructions should be severed from a particular functional structure, as with resultatives.

3.1 Arguments in favor of an SC analysis of resultative constructions

The SC approach to resultatives is not only conceptually more sound but also empirically more adequate.

On purely conceptual grounds, it allows us to limit the core arguments contained within verb phrases to at most one (see Marantz 2013:157), and thus to reduce the number of potential syntactic configurations to a minimum. This is undoubtedly a desirable outcome either in terms of minimalist considerations or in face of the problems of learnability and evolvability.

The SC approach also receives substantial empirical support. In previous studies, subextraction, nominalization, and adverbial modification have all been used as diagnostics of SCs. But Bruening (2018) describes them as non-reliable, which we assume is correct. Leaving them aside, in what follows we will provide three major empirical arguments for an SC analysis of resultatives. The relevant data are mainly from Mandarin Chinese.

3.1.1 The Direct Object Restriction

One of the generalizations Simpson (1983) made about English resultatives was termed Direct Object Restriction (DOR) by Levin and Rappaport (1995:34). To put it in this article's terminology, the DOR states that a resultative predicate can only be predicated of the theme DP, and nothing else. For instance, the unacceptability of the following sentence can be accounted for by the DOR.

(13)   *I ate the food full. (Simpson 1983:144)
          Intended reading: 'I became full from eating.'

Yet, later Rappaport and Levin (2001:770) took the following sentences, from Wechsler (1997) and Verspoor (1997) respectively, as counter-evidence against the correctness of the DOR.

(14)   a.   The wise men followed the star out of Bethlehem.
        b.   John danced mazurkas across the room.
        (14a) from Wechsler (1997), (14b) from Verspoor (1997)

However, treating the putative resultative predicates in (14a-b) as adjuncts, Mateu (2005) argues that the "exceptional" examples, represented by (14a-b), are only in apparent violation of the DOR, and that the DOR on English resultatives should be "reinstated".

Does the DOR hold in Mandarin Chinese? Drawing on data where the secondary predicates of ComRes are predicated of the subjects "even in the presence of an object" (Huang 2006:8), Huang (2006) concludes that the DOR does not hold in Mandarin Chinese. For instance, the secondary predicate *dong* 'understand' is predicated of the subjects *Lisi* 'Lisi' in (15a) and *ni* 'you' in (15b).

(15)   a.   Lisi kan-**dong**-le   na-ben shu / san-ben shu / ji-ben shu (?).
              Lisi look-understand-LE that-CL book / three-CL book / how.many-CL book
              'Lisi read that book/ three books/ how-many books and understood it/them (?).'
        b.   Ni   ting-**dong**-le   Lisi / na-ge ren / san-ge ren
              you   listen.to-understand-LE   Lisi / which-CL person/ three-CL person
              / ji-ge ren (?).
              / how.many-CL person
              'You heard Lisi/ which person/ three persons/ how-many persons and understood him/them (?).'
        (Huang 2006:8)

But we'll argue in Section 6.2 that the incompatibility of (15a-b) with the DOR is also apparent. The DOR should also hold in Chinese.

If the DOR is indeed a "principle" that holds both in English and in Mandarin Chinese, it undoubtedly favors an SC approach to resultatives over non-SC approaches, because the DOR falls out more naturally from the former than from the latter, which would have to posit additional mechanisms to accommodate the DOR[21].

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[21]For instance, Embick (2004:372) proposes structure (i) for resultatives, resultative participles, and deadjectival

3.1.2 Syntactic alternations in Mandarin Chinese

As stated by Bruening (2010:524), "Classifying something as Category A is only meaningful if one has the expectation that that thing will have properties of A." Indeed, the syntactic behaviors of resultative constructions and SC constructions in Mandarin Chinese parallel each other, and contrast with that of constructions with a single DP direct object.

For instance, both (transitive) resultative constructions and (transitive) SC constructions in Mandarin Chinese are able to participate in *ba*-alternation. As we have seen in Section 2.1, Res(nP/DP)s allow *ba*-alternation. This is also true of ComRes and SCcon(nP/DP)s [22].

(16) **ComRes**
    a. ***Non-ba-variant***
        Zhangsan qiaoqiao-de tui-kai wumen.
        Zhangsan quiet-DE push-open door
    a'. ***Ba-variant***
        Zhangsan qiaoqiao-de ba wumen tui-kai.
        Zhangsan quiet-DE BA door push-open
        Both a and a': 'Zhangsan pushed the door open quietly.'

(17) **Res(nP/DP)s**
    a. ***Non-ba-variant***
        gongsi jiang tiba ta wei dongshizhang.
        company will promote he for chairman.of.the.board
    a'. ***Ba-variant***
        gongsi jiang ba ta tiba-cheng/wei dongshizhang.
        company will BA he promote-CHENG/for chairman.of.the.board
        Both a and a': 'The company will promote him to the chairman of the board.'
    b. ***Ba-variant***
        moshushi ba shoupa bian-cheng/zuo/wei yi-zhi niao.
        magician BA handkerchief change-CHENG/as/for one-CL bird
        'The magician changed the handkerchief into a bird.'
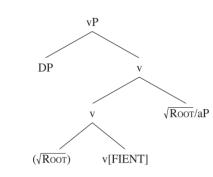
(18) **SCcon(nP/DP)s**
    a. ***Non-ba-variant***
        wo dang ta shagua. (from (9e))
        I consider he fool
    a'. ***Ba-variant***
        wo ba ta dang-(cheng/zuo) shagua.
        I BA he consider-CHENG/as fool
        Both a and a': 'I consider him a fool.'
    b. ***Non-ba-variant***
        ta jingran ma wo baichi!
        he surprisingly scold I idiot
    b'. ***Ba-variant***

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verbs. And a condition (ii) on v[FIENT] (similar to v[BECOME]) is formulated to derive the effects of the DOR.

(i)

(ii)   The complement of v[FIENT] must be predicated of a DP in the specifier of v[FIENT]. (Embick 2004:378)

[22] It should be pointed out, however, that SCcon(aP)s systematically disallow *ba*-alternation as well as Voice alternation for reasons that are not clear to me.

ta jingran   ba wo ma-cheng/zuo/wei   baichi!
he surprisingly BA I   scold-CHENG/as/for idiot
Both b and b': 'Surprisingly, he condemned me as an idiot!'

    c.   ***Non-ba-variant***
ta-de shouxia dou han   ta (zuo/wei) dage. (from (10b))
he-DE minion all   shout he as/for   big.brother

    c'.   ***Ba-variant***
ta-de shouxia dou ba ta han-cheng/zuo/wei   dage.
he-DE minion all BA he shout-CHENG/as/for big.brother
Both c and c': 'All of his minions call him Big Brother.'

    d.   ***Ba-variant***
ta neng ba hei-de   shuo-cheng bai-de.
he can BA black-DE say-CHENG white-DE
'He is likely to describe what is black as being white.'

By contrast, constructions with a single DP direct object do not allow *ba*-alternation, as illustrated below.

(19)   a.   ***Non-ba-variant***
Zhangsan jingchang dasao fangjian.
Zhangsan often   sweep room

    a'.   ***Ba-variant***
*Zhangsan jingchang ba fangjian dasao[23].
 Zhangsan often   BA room   sweep
Both a and a': 'Zhangsan often sweeps the room.'

In addition to *ba*-alternation, ComRes, Res(nP/DP)s, and SCcon(nP/DP)s could all participate in Voice alternation[24].

ComRes

(20)   a.   ***Transitive***
ta ganggang chui-gan toufa.
she just   blow-dry hair
'She has just blown her hair dry.'

    b.   ***Non-Voice-variant***
toufa ganggang chui-gan.
hair just   blow-dry
'Her hair has just been blown dry.'

Res(nP/DP)s

(21)   a.   ***Transitive***
gongsi jiang tiba   ta wei dongshizhang. (from (17a))
company will   promote he for chairman.of.the.board
'The company will promote him to the chairman of the board.'

    b.   ***Non-Voice-variant***
ta jiang tiba-cheng/wei   dongshizhang.
he will   promote-CHENG/for chairman.of.the.board
'He will be promoted to the chairman of the board.'

(22)   a.   ***Transitive***
moshushi ba shoupa   bian-cheng/zuo/wei   yi-zhi niao. (from (17b))
magician BA handkerchief change-CHENG/as/for one-CL bird
'The magician changed the handkerchief into a bird.'

    b.   ***Non-Voice-variant***
shoupa   bian-cheng/zuo/wei   yi-zhi niao.

---

[23]As for the examples of this subsection, we try to avoid using the verb-*le*, because we agree with Sybesma (1997) that it could, in some cases, function as a "resultative predicate" (see Section 6.1), and would accordingly make the syntactic behaviors of the relevant sentence parallel that of resultative constructions. That is, its presence or not is likely to influence the syntactic behaviors of the relevant sentence.

[24]It is a highly controversial issue to distinguish subjects from topics in Mandarin Chinese. We would leave it aside here and assume for the moment that the relevant examples all involve Voice alternation, rather than topicalization.

handkerchief change-CHENG/as/for one-CL bird
'The handkerchief changed into a bird.'

SCcon(nP/DP)s

(23) a. ***Transitive***
ta   ba   haoxin   dang-(cheng/zuo)   lv-gan-fei.
he   BA   good.heart   consider-CHENG/as   donkey-liver-lung
'He takes a kind heart as malice.'
Lit. 'He takes a good heart as a donkey's liver or lung.'

b. ***Non-Voice-variant***
haoxin   dang-(cheng/zuo)   lv-gan-fei.
good.heart   consider-CHENG/as   donkey-liver-lung
'A kind heart is taken as malice.'
Lit. 'A good heart is taken as a donkey's liver or lung.'

(24) a. ***Transitive***
yuyanxue-jia cheng   zhe-lei   biaoda   wei dongjieshi.
linguist   address this-CL^{kind} expression for resultative.construction
'Linguists call this kind of expressions resultative construction.'

b. ***Non-Voice-variant***
zhe-lei   biaoda   cheng-zuo/wei dongjieshi.
this- CL^{kind} expression address-as/for   resultative.construction
'This kind of expressions is called resultative construction.'

However, as with subextraction, nominalization, or adverbial modification, Voice alternation does not seem to be a reliable diagnostic of the existence of SCs, as constructions with a single DP direct object could also participate in Voice alternation under certain circumstances, as shown below.

(25) a. ***Transitive***
Zhangsan jingchang dasao   fangjian. (from (19a))
Zhangsan often   sweep   room
'Zhangsan often sweeps the room.'

b. ***Non-Voice-variant***
zhe-ge   fangjian jingchang dasao.
this-CL room   often   sweep
'This room is often swept.'

In brief, we could establish *ba*-alternation as a reliable diagnostic of SCs, and make the generalization that the involvement of an SC is what licenses the relevant construction to participate in *ba*-alternation. This is in line with Sybesma's (1999) analysis of *ba*-constructions, which treats all *ba*-constructions as involving an SC. Given this, it could be safely said that resultative constructions contain an SC since they do allow *ba*-alternation, as with SC constructions.

In order to facilitate the following discussions, Table 1 shows a clear picture of the existence ("Yes") and non-existence ("No") of the relevant constructions in Mandarin Chinese, in accord with the language facts presented above.

Table 1 The (non-)existence of relevant constructions in Mandarin Chinese

		Resultative construction		SC construction	
		ComRes	Res(nP/DP)	SCcon(nP/DP)	SCcon(aP)
Transitive	Non-*ba*-variant	Yes	Yes	Yes	Yes
	Ba-variant	Yes	Yes	Yes	No
Intransitive (Non-Voice-variant)		Yes	Yes	Yes	No

3.1.3 The particles

As can be observed from the language data above, Res(nP/DP)s in Mandarin Chinese involve particles that are usually found in SCcon(nP/DP)s, namely *cheng* 'CHENG', *zuo* 'as', and *wei* 'for'.

(26) a. ***Transitive Res(nP/DP): non-ba-variant***
ta   ganggang jia   wo   **(wei)** haoyou. (from (8b))

he just   add I   for   friend
'He just added me as a friend.'

    b.   ***Transitive SCcon(nP/DP): non-ba-variant***
        dajia   qinqie-de   chenghu ta **(wei)** Xiaozhang. (from (10c))
        people affectionate-DE call   he   for   little.Zhang
        'People affectionately call him Xiaozhang.'

(27) a.   ***Transitive Res(nP/DP): ba-variant***
        moshushi ba shoupa   bian-**cheng/zuo/wei** yi-zhi   niao. (from (22a))
        magician BA handkerchief change-CHENG/as/for one-CL bird
        'The magician changed the handkerchief into a bird.'

    b.   ***Transitive SCcon(nP/DP): ba-variant***
        ta jingran   ba wo ma-**cheng/zuo/wei**   baichi! (from (18b'))
        he surprisingly BA I   scold-CHENG/as/for idiot
        'Surprisingly, he condemned me as an idiot!'

(28) a.   ***Intransitive Res(nP/DP)***
        shoupa   bian-**cheng/zuo/wei**   yi-zhi   niao. (from (22b))
        handkerchief change-CHENG/as/for one-CL bird
        'The handkerchief changed into a bird.'

    b.   ***Intransitive SCcon(nP/DP)***
        haoxin   dang-**(cheng/zuo)**   lv-gan-fei. (from (23b))
        good.heart consider-CHENG/as donkey-liver-lung
        'A kind heart is taken as malice.'
        Lit. 'A good heart is taken as a donkey's liver or lung.'

Therefore, Res(nP/DP)s can be assumed to involve the same syntactic structure as SCcon(nP/DP)s, so that they both create an appropriate phonological configuration for the appearance of these particles[25]. See an analysis of these particles in Section 4.2.

3.2 Verbal roots as event modifiers

It is widely accepted among proponents of the constructivist approach that the argument structure of resultative constructions at least, either in English or in Mandarin Chinese, is determined by an underlying functional syntactic structure (for English resultatives, see Embick 2004; Marantz 2013; Alexiadou, Anagnostopoulou, and Schäfer 2015; Harley 2008; Folli and Harley 2020, among others; for ComRes in Mandarin Chinese, see Yang 2018). For instance, Folli and Harley (2020:447) states that "The notion that roots are introduced in an 'exoskeletal' functional frame that has an independent structural meaning is central to constructionalist approaches [the constructivist approach] to verb frame alternations…" And we will follow Marantz (2013) and Borer (2005) in assuming that the verbal roots involved (roots of the primary predicates), or listemes in Borer's (2005) terminology, are introduced as modifiers of the eventuality that this functional structure is interpreted to encode.

Yet, no one has independently argued that the verbal roots involved in SC constructions should also be treated as event modifiers. This subsection will first give evidence to this idea, and then sketch how this is technically implemented.

3.2.1 Verbal roots vs. the functional syntactic structure of SC constructions

Compare (29a) with (29b) and (29c).

(29) a.   John uses Cologne as an air freshener.
      b.   I respect him as a doctor. (Oxford English Dictionary 2021)
      c.   She works as a courier. (Oxford English Dictionary 2021)

The post-*as* nP/DP phrase in the three sentences above can all be assumed to be predicated of another DP phrase, namely, the object DP *Cologne* in (29a), the object DP *him* in (29b), and the subject DP *she*

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[25]Similarly, the English particle *as*, which often occurs in SC constructions, can also be found in a resultative, such as the so-called "denominative" (cf. footnote 13).

(i)   The people elected him **(as)** president.

in (29c). However, the difference between (29a) on the one hand and (29b-c) on the other hand lies in the fact that whereas (29b) presupposes "he is a doctor" and (29c) entails "she is a courier", (29a) neither entails nor presupposes "Cologne is an air freshener". We assume that the post-*as* constituent *an air freshener* in (29a) is part of a statement, namely "Cologne as/being an air freshener", which, although incompatible with the actual state of the world, can be compatible with other possible states of the world, such as those that conform to the attitude of the referent of the subject DP *John* in the actual world. That is, (29a) expresses the semantics of attitude ascription, typical of attitude-type SC constructions, and should thus be classified as an attitude-type SC construction. There is evidence supporting this assumption. For instance, (29a) could create a propositional attitude context in which quantifiers are likely to exhibit scopal variations, just like canonical attitude-type SC constructions (cf. Section 2.2). Consider the following example. The post-*as* indefinite in (30) is likely to be ambiguous between specific and non-specific readings, which is generally analyzed as instances of scopal variation[26].

(30)   John uses Cologne as something.

In addition, (29a) can be paraphrased roughly as follows.

(31)   John perceives Cologne as an air freshener in using it.

If the above paraphrase of (29a) is correct, we are fully justified in our assumption that (29a) does express the semantics of attitude ascription, as the canonical attitude-type SC constructions do. However, the problem is that the matrix verb (primary predicate) involved in (29a), namely *use*, does not belong to the canonical propositional attitude verbs we have identified in Section 2.2, which was tacitly assumed in the literature to be source of the semantics of attitude ascription. In this light, we have good reasons to believe that the semantics of attitude ascription arises from the semantic interpretation of a particular functional syntactic structure that underlies (29a) and all those canonical attitude-type SC constructions. The verbal root √*use* functions as a modifier, say a manner modifier, of the eventuality that this functional structure is interpreted to encode, indicating that it does not project and thus does not take any complements.

    Now, what if we did not treat the verbal root √*use* as an event modifier but, instead, assumed it to take a complement in the traditional way? That would mean the verbal root √*use* denotes a function with the complement being its internal argument. In that case, semantic composition rules at the interface would lead us to the conclusion that the semantics of attitude ascription expressed by (29a) were part of the encyclopedic knowledge of the verbal root √*use*, arising either from the verbal root itself or from the interplay between the verbal root and its argument. As a result, we would have to assume that the verbal root √*use* involved in (29a) were different from the one involved in (32), because the latter does not denote the semantics of attitude ascription intrinsically. This is obviously undesirable under minimalist scruples.

(32)   John uses Cologne.

    According to the analysis above, the argument structure of attitude-type SC constructions should not be "projected" from the lexical properties of verbal roots, but licensed by a particular functional syntactic structure, the existence of which is supposed to be independent of any individual verbal root[27].

    It would thus be by no means implausible to assume that the following sentences, including the perception-type SC construction (33d) and the raising SC construction (33g) (both repeated from Section 2.2), all share the same underlying functional structure with attitude-type SC constructions, though with secondary predicates of different categories, as they all convey some sense of attitude ascription[28]. Take (33a) for instance. It is synonymous with (34). This functional structure can be modified by different verbal roots, such as √*classify* in (33a), √*describe* in (33b), √*prove* in (33c), √*see* in (33d), √*regard* in (33e), √*perceive* in (33f), and √*seem* in (33g). These individual verbal roots denote, for instance, different manners of the same type of eventuality, contributing idiosyncratic lexical meanings to the interpretation of the same functional syntactic structure.

(33)   a.   I wouldn't **classify** it as a science fiction.

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[26]It could be assumed that an epistemic modality operator is introduced in this context. See Liu (2010).

[27]As Marantz (2013:155) puts it, "…the syntactically representable meanings exist independent of any particular verbs…"

[28]Here, for expository purposes, we do not make a distinction between the transitive and intransitive (or non-Voice-variant) versions of the functional structure under discussion. Whereas in transitives, such as (33a-f), the "attitude" is generally ascribed to the referent of the matrix subject DP, in (33g), the intransitive, it is ascribed to the speaker.

b. Jim was **described** by his colleagues as 'unusual'. (Oxford English Dictionary 2021)
c. She was determined to **prove** everyone wrong (Oxford English Dictionary 2021)
d. Kim **saw** Sam mad.
e. Capital punishment was **regarded** as inhuman and immoral.
(Oxford English Dictionary 2021)
f. She did not **perceive** herself as disabled. (Oxford English Dictionary 2021)
g. John **seems** mad.

(34) I don't consider it as a science fiction and wouldn't classify it like so.

The reasoning above also holds for SC constructions in Mandarin Chinese. In this regard, speech-type SCcon(aP)s are perhaps the most telling. For instance, the following example, repeated from (10d) in Section 2.2, expresses a clear sense of subjective judgement by the referent of the subject DP[29], although the verbal root (root of the primary predicate), namely √*xiao* 'deride', does not encode any sense of attitude ascription intrinsically.

(35) Zhangsan **xiao** ni   sha.
      Zhangsan deride you silly
      'Zhangsan derided you as being silly.'

By the same token, the following sentences can all be viewed as SC constructions (specifically transitive SCcon(nP/DP)s), involving the same functional syntactic structure at issue. The verbal roots involved are therefore modifiers of this functional structure. Take (36a), the Chinese counterpart of (29a), for instance. It is synonymous with (37), in which the part printed in boldface is a canonical attitude-type SC construction.

(36) a. Zhangsan ba kelong-xiangshui **yong**-zuo kongqi qingxinji.
         Zhangsan BA Cologne   use-as   air   freshener
         'Zhangsan uses Cologne as an air freshener.'
      b. renmen chang ba daxue   **biyu**-cheng/wei   xiangyata.
         people often BA college compare-CHENG/for ivory.tower
         'People often compare the college to an ivory tower.'
      c. jingfang ba zhe-qi   shijian **rending**-wei kongbu xiji.
         police   BA this-CL incident designate-for terror attack
         'The police designated this incident as a terrorist attack.'
      d. ta neng ba hei-de   **shuo**-cheng bai-de. (from (18d))
         he can BA black-DE say-CHENG white-DE
         'He is likely to describe what is black as being white.'
      e. hanyu   yanjiuzhe chang ba jushou   mingci **kan**-cheng/zuo   huati.
         Chinese researcher often BA sentence.initial noun   view-CHENG/as topic
         'Chinese researchers often view sentence-initial nominals as topics.'
      f. *Non-ba-variant*
         renmin **shi** ta wei minzu yingxiong.
         people regard he for nation hero
      f'. *Ba-variant*
         renmin ba ta **shi**-zuo/wei minzu yingxiong.
         people BA he regard-as/for nation hero
         Both f and f': 'The people regard him as a national hero.'

(37) Zhangsan **ba kelong-xiangshui dang-zuo kongqi qingxinji** yong.
      Zhangsan BA Cologne   consider-as air   freshener   use
      'Zhangsan perceives Cologne as an air freshener in using it.'

The discussions so far in this subsection has basically two major consequences. First, all types of SC constructions, either in English or in Mandarin Chinese, are supposed to share a common functional syntactic structure, the semantic interpretation of which gives rise to the semantics of attitude ascription. The verbal roots involved in them unexceptionally function as event modifiers. Second, SC constructions can be potentially productive in the manner that resultative constructions are (cf. Section 2.1). For instance, Mandarin Chinese has such a pattern as "DP$_{EA}$ V$_{Pr1}$-cheng DP$_{Pr2}$"[30], which could license many

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[29]The embedded SCs are labelled, by Liu (2010:1033), as "epistemic adjectival small clauses."

[30]In this article, the external argument will be notated as *EA*. In addition, The functional morpheme *cheng* here, the same as the particle involved in previous Chinese examples, should not be confused with a phonologically identical

different verbs to instantiate the primary predicate V_{Pr1}, as illustrated below.

(38) a. ta **chuan**-cheng wo-de yifu le.
           he wear-CHENG I-DE clothes LE
           'He wore my clothes by mistake.'
      b. Zhangsan **qi**-cheng wo-de zixingche le.
           Zhangsan ride-CHENG I-DE bike LE
           'Zhangsan rode my bike by mistake.'
      c. Zhangsan **dasao**-cheng wo-de fangjian le.
           Zhangsan sweep-CHENG I-DE room LE
           'Zhangsan swept my room by mistake.'

They all mean something like "the referent of the subject DP (DP_{EA}) imposed an action, as denoted by the verb (V_{Pr1}), upon the referent of the post-*cheng* DP (DP_{Pr2}) by mistake."[31] This pattern could be plausibly viewed as the result of taking the theme DP out of a transitive SCcon(nP/DP). Take (38a) for instance. It can be paraphrased as follows:

(39) ta (ba [DP ta yinggai chuan de] yifu]) dang-cheng wo-de yifu
      he BA   he be.supposed.to wear DE clothes consider-CHENG I-DE clothes
      chuan le.
      wear LE
      'In wearing my clothes, he (mis)took what he is supposed to wear for my clothes.'

3.2.2 Technical implementation: Direct Merge

The previous subsection has argued that the verbal roots involved in SC constructions function as event modifiers, just like those involved in resultative constructions. Given this, a generalization could perhaps be made that all verbal roots are actually event modifiers[32], as has been advocated by Marantz (2013). As Marantz (2013:155) puts it, "The flexibility in appearance of verbal roots in different syntactic/semantic frames is partially predictable from the meanings associated with the roots…but the idiosyncrasies in use of verbal roots must be separated from the general, non-idiosyncratic connection between structure and meaning, both in a language and universally. That is, the syntactically representable meanings exist independent of any particular verbs, and idiosyncratic semantic requirements of verbs must make use of these syntactically available meanings."

We will follow Embick (2004) in assuming that the verbal root Direct Merges (pair merge) with the relevant functional head. For instance, the root of the primary predicate, in either resultatives or SC constructions, Direct Merges with the little v, creating a complex head <√, v>.

(40)   …vP

From a minimalist perspective, the little v should not have different flavors in narrow syntax. Those different "flavors" of v are supposed to be derived at the C-I interface. And syntax should be autonomous from semantics, in the sense that syntactic representations, structures, and relations are not be determined by semantic factors (see Marantz 2013 and Wood and Marantz 2017).

Semantically, the little v introduces an eventuality, such as an activity or a state. The root may combine with it via Event Identification. See Section 5.1 for detailed compositional semantics for the two constructions.

To sum up, based on the discussions above, we could arrive at the conclusion that resultative constructions and SC constructions share the same basic syntactic structure in narrow syntax: both constructions contain an SC, and the verbal roots (the root of the primary predicate) involved in both

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root morpheme in such resultative compounds as *he-cheng* 'compose-accomplished', although they seem to be related to each other. See Section 4.2.

[31]Note that the logical object of the verb (V_{Pr1}) is the post-*cheng* DP (DP_{Pr2}).

[32]The so-called "state/result roots" involved in lexical causatives/inchoatives can be taken as modifiers of result states. See Section 6.1.
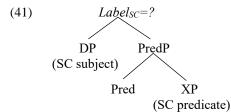
constructions function as event modifiers.

4 Syntactic derivations and the autonomy of syntax

This section will first elaborate on the syntactic structures and derivations that the two constructions share in common, and then make a postsyntactic analysis of the particles involved in the relevant constructions in Mandarin Chinese, which gives support to the idea developed in Marantz (2013) and Wood and Marantz (2017) that syntax is autonomous.

4.1 The functional head of Pred and syntactic derivations

Under the assumption that syntax is autonomous, the SCs involved in the syntactic structures of resultative constructions and SC constructions should not be distinguished in narrow syntax, although they could be interpreted differently at the C-I interface (see Section 5.1). We will assume that the SC subject, namely the theme DP, is introduced by an independent functional head, just as the external argument of a vP is introduced by Voice[33], and dub it as Pred (a mnemonic for predication), borrowing Bowers' (1993, 2001) term[34]. Particles, such as *as* and *for*, which are usually found in English SC constructions, as well as their respective Chinese counterparts *zuo* and *wei*, which often appear in the above examples of not only Res(nP/DP)s but also SCcon(nP/DP)s in Mandarin Chinese (cf. Section 3.1.3, for instance), can all be analyzed as phonological realizations of the functional head of Pred.

Accordingly, the structure of an SC should look like (41)[35], where XP can be aP, nP/DP, or PP.

(41)   *Label$_{SC}$=?*

```
              Label_SC=?
             /        \
          DP          PredP
      (SC subject)    /    \
                   Pred    XP
                        (SC predicate)
```
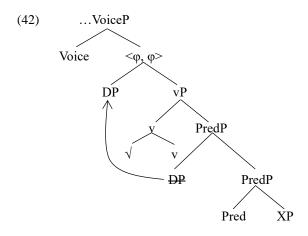
What is important here is that the SC is in need of a label. In accordance with the labeling theory developed in Chomsky (2013, 2015), syntactic objects (henceforth SOs) have to be labeled by labeling algorithm (henceforth LA) so that they can be interpreted at the C-I interface. LA is just minimal search, a third factor principle. According to Chomsky (2013, 2015), if SO={H, XP} (such as PredP shown above), where H is a head and XP a phrase, minimal search will locate H first, and as a result, H will be selected as the label of the SO. If SO={XP, YP}, where XP and YP are both phrases, minimal search is ambiguous as it finds two heads X and Y simultaneously. Two options are available in this case: in one, either XP or YP raise out of the SO so that the SO receives the label of the term that remains in situ; in the other option, X and Y share the most prominent feature that can be taken as the label of the SO. The latter option requires that agreement relation be established between XP and YP. Since the SC is of the form {XP, YP}, specifically {DP, PredP}, and it involves no agreement (see Chomsky 2013), the only way that it can be labeled is to raise DP or PredP. Suppose DP raises and PredP remains in situ. Then the

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[33]See Wood and Marantz (2017) for a unified treatment of argument-introducing heads.

[34]But different from Bowers (1993, 2001) who treats Voice also as a kind of Pred, we will make a distinction between them. Note that whatever connotations this term, namely Pred, might have, it is only used for introducing the SC external argument. See Matushansky (2019) for arguments "against the PredP theory of small clauses."
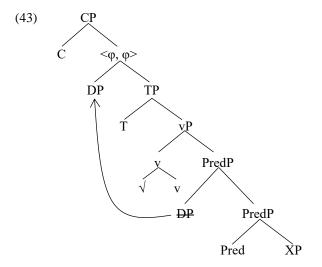
[35]We'll argue in Section 6 that the SCs, involved in the structures of lexical causatives/inchoatives in English, in ComRes in Mandarin Chinese, as well as in constructions containing pseudo-resultatives in English, are all ResPs, the head of which not only introduces the SC subject, but also functions as the SC predicate.

syntactic derivation for transitive resultative constructions and SC constructions works as follows.

(42)

```
        …VoiceP
        /      \
    Voice    <φ, φ>
            /      \
          DP        vP
          ↑        /   \
          |       v     PredP
          |      / \    /    \
          |     √   v  DP    PredP
          |_____ D̶P̶      /    \
                          Pred    XP
```

DP, namely the SC subject or the theme DP, moves to Spec-v[36]. The SC can thus be labeled as the only visible head, Pred. But the SO={DP, vP} is again of the form {XP, YP}. Different from SO={DP, PredP}, SO={DP, vP} can be labeled by the second option: v inherits agreement features from the phase head Voice (for feature inheritance, see Chomsky 2008, 2015). Agreement takes place between v and DP, and DP is marked as accusative Case. The existence of agreement between v and DP permits the SO={DP, vP} to be labeled as the agreeing features, namely <φ, φ>.

For intransitive resultative constructions and SC constructions, the syntactic derivation proceeds as follows.

(43)

```
        CP
       /  \
      C   <φ, φ>
          /    \
        DP      TP
        ↑      /   \
        |     T     vP
        |          /   \
        |         v     PredP
        |        / \    /    \
        |       √   v  DP    PredP
        |_____ D̶P̶     /     \
                         Pred    XP
```

(43) differs from (42) in that the former has only a single phase head, namely C. As a corollary of the absence of another phase head Voice, v in (43) has no agreement features to inherit, which would lead to a failure of labeling if DP moves to Spec-v. Therefore, DP moves to Spec-T. The SC receives the label of PredP. And again the second option is invoked to label the SO={DP, TP}: T inherits agreement features and also tense from the phase head C. Agreement takes place between T and DP, and DP is marked as nominative Case. Thus, the SO={DP, TP} can be labeled as the most prominent features that DP and vP share, namely <φ, φ>.

The derivation processes are illustrated below with English examples of transitive resultative (44a)

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[36]Note that the notion of Specifier is undefinable under the labeling theory. It is used in this article just for exposition.

and SC construction (45a), as well as the intransitive resultative (46a) and SC construction (47a). It is worth noting that in the derivations of transitives, the complex head $<\sqrt{}, v>$ head-raises to Voice, forming a complex head of a larger size, namely $<<\sqrt{}, v>, \text{Voice}>$[37].

(44) **Transitive resultative**
    a. John hammered the metal flat. (from (1))
    b. [CP C [δ=<φ, φ> John [TP T [γ=VoiceP ~~John~~ [VoiceP <<√hammer, v>, Voice> [β=<φ, φ> [DP the metal] [vP <~~√hammer, v~~> [α=PredP ~~[DP the metal]~~ [PredP Pred [aP flat]]]]]]]]]]

(45) **Transitive SC construction**
    a. John considers Mary (as) intelligent. (from (2))
    b. [CP C [δ=<φ, φ> John [TP T [γ=VoiceP ~~John~~ [VoiceP <<√consider, v>, Voice> [β=<φ, φ> Mary [vP <~~√consider, v~~> [α=PredP ~~Mary~~ [PredP (as) [aP intelligent]]]]]]]]]]

(46) **Intransitive resultative**
    a. The garage door rumbles open. (Mateu 2005:61)
    b. [CP C [β=<φ, φ> [DP the garbage door] [TP T [vP <√rumble, v> [α=PredP ~~[DP the garbage door]~~ [PredP Pred [aP open]]]]]]]

(47) **Intransitive SC construction**
    a. John seems mad. (from (12))
    b. [CP C [β=<φ, φ> John [TP T [vP <√seem, v> [α=PredP ~~John~~ [PredP Pred [aP mad]]]]]]]

The relevant constructions in Mandarin Chinese should also involve the syntactic structures and derivations shown in (42) and (43), except perhaps only ComRes, the syntactic structure of which will be investigated in Section 6.2. But unlike English, transitive Res(nP/DP)s and SCcon(nP/DP)s in Mandarin Chinese both have *ba*-variants (cf. Section 3.1.2). We will analyze *ba* as the overt spellout of Voice, which is responsible for introducing the external argument. And we assume that *ba*-variants of either transitive Res(nP/DP)s or SCcon(nP/DP)s have essentially the same syntactic structures as non-*ba*-variants, except that the derivation of the former does not involve head movement to Voice in narrow syntax. The structures and derivations of the relevant constructions in Chinese are illustrated below[38].

(48) **Transitive Res(nP/DP): non-ba-variant**
    a. renmin xuanju ta wei zongtong. (from (8a))
        people elect he for president
        'The people elected him (as) president.'
    b. [CP C [δ=<φ, φ> renmin [TP T [γ=VoiceP ~~renmin~~ [VoiceP <<√xuanju, v>, Voice> [β=<φ, φ> **ta** [vP <~~√xuanju, v~~> [α=PredP ~~ta~~ [PredP Pred [nP zongtong]]]]]]]]]]][39]

(49) **Transitive SCcon(nP/DP): non-ba-variant**[40]
    a. wo dang ta shagua. (from (18a))
        I consider he fool
        'I consider him a fool.'
    b. [CP C [δ=<φ, φ> wo [TP T [γ=VoiceP ~~wo~~ [VoiceP <<√dang, v>, Voice> [β=<φ, φ> **ta** [vP <~~√dang, v~~>

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[37]The issue of where head movement operates is currently a controversial one (cf. Chomsky, Gallego, and Ott 2019; Hsu 2021; Arregi and Pietraszko 2021; Sato and Maeda 2021). See Matushansky (2006) for an alternative that treats head movement as involving both syntactic and morphological operations (m-merger). For simplicity's sake, we'll stick with the traditional analysis of head movement.

[38]The particles involved in the examples will be left aside for the moment.

[39]Note that AND-compounds, such as *xuan-ju* 'choose-recommend', should involve the direct combination of two roots, which we assume does not yield a hierarchical structure. For simplicity's sake, √*xuanju* is taken as a single root.

[40]Recall that SCcon(aP)s systematically disallow *ba*-alternation as well as Voice alternation, and thus they have only non-*ba*-variant of transitives (cf. Table 1 in Section 3.1.2), which should involve the same syntactic structure and derivation as the corresponding variant of either Res(nP/DP)s or SCcon(nP/DP)s. For instance, compare the following example with (48) and (49).

(i) **Transitive SCcon(aP):non-ba-variant**
    a. Zhangsan xiao ni sha. (from (10d))
        Zhangsan deride you silly
        'Zhangsan derided you as being silly.'
    b. [CP C [δ=<φ, φ> Zhangsan [TP T [γ=VoiceP ~~Zhangsan~~ [VoiceP <<√xiao, v>, Voice> [β=<φ, φ> **ni** [vP <~~√xiao, v~~> [α=PredP ~~ni~~ [PredP Pred [aP sha]]]]]]]]]]]

[$_{\alpha=\text{PredP}}$ ~~ta~~ [$_{\text{PredP}}$ Pred [$_{\text{nP}}$ shagua]]]]]]]]]]

(50) ***Transitive Res(nP/DP): ba-variant***

    a.   renmin ba ta xuanju-wei zongtong. (*ba*-counterpart of (48a), from (8a'))
         people BA he elect-for   president
         'The people elected him (as) president.'

    b.   [$_{\text{CP}}$ C [$_{\delta=<\varphi, \varphi>}$ renmin [$_{\text{TP}}$ T [$_{\gamma=\text{VoiceP}}$ ~~renmin~~ [$_{\text{VoiceP}}$ ba [$_{\beta=<\varphi, \varphi>}$ ta [$_{\text{vP}}$ <$\sqrt{}$xuanju, v> [$_{\alpha=\text{PredP}}$ ~~ta~~ [$_{\text{PredP}}$ Pred [$_{\text{nP}}$ zongtong]]]]]]]]]]]

(51) ***Transitive SCcon(nP/DP): ba-variant***

    a.   wo ba ta dang-(cheng/zuo)   shagua. (*ba*-counterpart of (49a), from (18a'))
         I   BA he consider-(CHENG/as)   fool
         'I consider him a fool.'

    b.   [$_{\text{CP}}$ C [$_{\delta=<\varphi, \varphi>}$ wo [$_{\text{TP}}$ T [$_{\gamma=\text{VoiceP}}$ ~~wo~~ [$_{\text{VoiceP}}$ ba [$_{\beta=<\varphi, \varphi>}$ ta [$_{\text{vP}}$ <$\sqrt{}$dang, v> [$_{\alpha=\text{PredP}}$ ~~ta~~ [$_{\text{PredP}}$ Pred [$_{\text{nP}}$ shagua]]]]]]]]]]]

(52) ***Intransitive Res(nP/DP)***

    a.   shoupa   bian-cheng/zuo/wei   yi-zhi   niao. (from (22b))
         handkerchief change-CHENG/as/for one-CL bird
         'The handkerchief changed into a bird.'

    b.   [$_{\text{CP}}$ C [$_{\beta=<\varphi, \varphi>}$ shoupa [$_{\text{TP}}$ T [$_{\text{vP}}$ <$\sqrt{}$bian, v> [$_{\alpha=\text{PredP}}$ ~~shoupa~~ [$_{\text{PredP}}$ Pred [$_{\text{nP}}$ yi-zhi niao]]]]]]]]

(53) ***Intransitive SCcon(nP/DP)***

    a.   haoxin   dang-(cheng/zuo)   lv-gan-fei. (from (23b))
         good.heart consider-CHENG/as donkey-liver-lung
         'A kind heart is taken as malice.'
         Lit. 'A good heart is taken as a donkey's liver or lung.'

    b.   [$_{\text{CP}}$ C [$_{\beta=<\varphi, \varphi>}$ haoxin [$_{\text{TP}}$ T [$_{\text{vP}}$ <$\sqrt{}$dang, v> [$_{\alpha=\text{PredP}}$ ~~haoxin~~ [$_{\text{PredP}}$ Pred [$_{\text{nP}}$ lv-gan-fei]]]]]]]]

The structure and derivation of each variant of Res(nP/DP) are exactly the same as those of the corresponding variant of SCcon(nP/DP). Note that, in terms of postsyntactic linear relations, one major difference between non-*ba*-variants of transitives on the one hand, namely (48) and (49), and *ba*-variants of transitives and intransitives on the other hand, namely (50)-(53), is that whereas the theme DP (in boldface and underlined) intervenes between Pred and the complex head $\sqrt{}$-v-Voice in the former, Pred is linearly adjacent to the complex head $\sqrt{}$-v in the latter with no overt constituents intervening between them[41]. This is crucially important to our discussions in the next subsection about the particles in Mandarin Chinese.

4.2 *-cheng* as the exponent of v

Mandarin Chinese is usually seen as morphologically impoverished. However, sometimes it does show nontrivial morphological cues which, if understood correctly, can be used as a tool for justifying or falsifying a certain hypothesis. This subsection will take a closer look at the three particles, namely *cheng* 'CHENG', *zuo* 'as', and *wei* 'for', that often appear in the above Chinese examples of both resultative constructions and SC constructions. Since they are present only when the secondary predicate is nP/DP (cf. Section 3.1.3), we'll be mainly concerned with Res(nP/DP)s and SCcon(nP/DP)s in this subsection[42]. The analysis will be made within the framework of Distributed Morphology, which proposes that functional morphemes are not represented with phonological forms in narrow syntax, but receive phonological exponents via the operation of Vocabulary Insertion postsyntactically at PF (see Embick 2015; Embick and Noyer 2007).

    Although the use of the three particles varies considerably from sentence to sentence, there has actually emerged from the language data above a general pattern of their distribution across different variants of Res(nP/DP) or SCcon(nP/DP), which can be described below. Note that each variant of Res(nP/DP)

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[41]We assume that in Mandarin Chinese the functional morpheme of T is always obliterated or deleted in the PF component, whether or not the relevant head raises to it in narrow syntax. Thus, T is neglected here and will also be in the next subsection where we are concerned with postsyntactic derivations.

[42]See footnote 47 for reasons why ComRes and SCcon(aP)s do not involve these particles.

follows exactly the same pattern as the corresponding variant of SCcon(nP/DP).

Table 2 The distribution pattern of particles

		Res(nP/DP)/SCcon(nP/DP)
Transitive	Non-*ba*-variant	DP$_{EA}$ V$_{Pr1}$ DP$_{Theme\,DP}$ $\left\{\begin{matrix}\textbf{zuo}^{\,a}\\\textbf{wei}\\\textbf{Ø}\end{matrix}\right\}$ nP/DP$_{Pr2}$
	Ba-variant	DP$_{EA}$ ba DP$_{Theme\,DP}$ V$_{Pr1}$- $\left\{\begin{matrix}\textbf{cheng}\\\textbf{zuo}\\\textbf{wei}\\\textbf{Ø}\end{matrix}\right\}$ nP/DP$_{Pr2}$
Intransitive		DP$_{Theme\,DP}$ V$_{Pr1}$- $\left\{\begin{matrix}\textbf{cheng}\\\textbf{zuo}\\\textbf{wei}\\\textbf{Ø}\end{matrix}\right\}$ nP/DP$_{Pr2}$

^a This kind of notation indicates alternatives: what can appear in the relevant context is limited to the members in the curly bracket "{}", which cannot appear simultaneously.

We have assumed in the previous subsection that *zuo* and *wei* are phonological realizations of the functional morpheme of Pred. As we can see from Table 2, the particle *cheng* always appears linearly adjacent to the primary predicate, unlike *zuo* and *wei* which can also appear in post-DP position.

(54)   a.   ***Transitive Res(nP/DP): non-ba-variant***
          ta ganggang [$_{Pr1}$ jia] [$_{Theme\,DP}$ wo] **(*cheng/wei)** haoyou. (from (8b))
          he just   add   I   CHENG/for friend
          'He just added me as a friend.'
      b.   ***Transitive SCcon(nP/DP): non-ba-variant***
          wo xiao shihou chang [$_{Pr1}$ cheng] [$_{Theme\,DP}$ ta] **(*cheng/zuo/wei)** shufu.
          I   small time   often   address   he   CHENG/as/for uncle
          'I used to address him as uncle when I was a child.'
          ((54b) from (10a))

In addition, the fact that the particle *cheng* precedes the verb-*le*, which is always affixed to a verb (cf. footnote 6), suggests that it right-adjoins to the predicate it is adjacent to.

(55)   a.   ***Transitive Res(nP/DP): ba-variant***
          na-ge xiaohua ba Lisi [$_{Pr1}$ xiao]-**cheng-le**   fengzi. (from (8g))
          that-CL joke   BA Lisi   laugh-CHENG-LE mad.person
          'That joke changed Lisi into a mad person by making him laugh.'
      b.   ***Transitive SCcon(nP/DP): ba-variant***
          ta ba hei-de   [$_{Pr1}$ shuo]-**cheng-le**   bai-de. (adapted from (18d))
          he BA black-DE   say-CHENG-LE white-DE
          'He described what is black as being white.'

In this light, it should be reasonable to analyze the particle *cheng* as the phonological realization of the little v. Actually, there is an additional reason for treating the particles *zuo* and *wei* as phonological realizations of Pred and the particle *cheng* as that of v: whereas the former two are originated from copular particles in ancient Chinese, the latter seems to be derived from a phonologically identical root morpheme, which means roughly 'to become' or 'to accomplish', as illustrated by the mono-morphemic verb in (56a) and the resultative compound in (56b).

(56) a. women **cheng**-(wei) haopengyou le.
          we   **become**-(for) good.friend LE
          'We became good friends.'
      b. *he-cheng*
          'compose-**accomplished**'

If this analysis is on the right track, it would be interesting to know under what contextual conditions the relevant functional morphemes, namely v and Pred, are phonologically realized as the exponents -*cheng* and -*zuo*/-*wei* respectively.

The functional morpheme of v cannot be phonologically realized as -*cheng* in any other constructions but Res(nP/DP)s and SCcon(nP/DP)s.

(57) a. ***Transitive construction with a single DP object***
          ta   chi-**(*cheng)**-le yi-ge   pingguo.
          he   eat-CHENG-LE one-CL   apple
          'He ate an apple.'
      b. ***Unergative***
          ta   xiao-**(*cheng)**-le.
          she   smile-CHENG-LE
          'She smiled.'
      c. ***Inchoative***
          chuan   chen-**(*cheng)**-le.
          ship   sink-CHENG-LE
          'The ship sank.'

Even in Res(nP/DP)s/SCcon(nP/DP)s, the little v does not always have an exponent -*cheng*. As shown in Table 2, the particle *cheng* appears in intransitives and *ba*-variants of transitives, but not in non-*ba*-variants of transitives. Recall that the functional morpheme of Pred is linearly adjacent to the complex head containing little v in the former two but not in the latter (cf. the last subsection). And if the theme DP in the latter is dislocated so that Pred is also linearly adjacent to the complex head containing v, the exponent -*cheng* can be added to the little v, as shown by the contrasts below.

(58) a. ***Transitive Res(nP/DP): non-ba-variant***
          gongsi   jiang [Pr1 tiba]-**(*cheng)**   [Theme DP ta] wei [Pr2 dongshizhang]. (from (17a))
          company   will   promote-CHENG   he   for   chairman.of.the.board
          'The company will promote him to the chairman of the board.'
      b. ***Topicalization***
          [Theme DP ta], gongsi   jiang [Pr1 tiba]-**cheng**   [Theme DP ta] [Pr2 dongshizhang].

              he company will   promote-CHENG   chairman.of.the.board
          'Him, the company will promote to the chairman of the board.'

(59) a. ***Transitive SCcon(nP/DP): non-ba-variant***
          wo [Pr1 dang]-**(*cheng)**   [Theme DP ta] [Pr2 shagua]. (from (9e))
          I   consider-CHENG   he   fool
          'I consider him a fool.'
      b. ***Topicalization***
          [Theme DP ta], wo [Pr1 dang]-**(cheng)**   [Theme DP ta] [Pr2 shagua].

              he I   consider-CHENG   fool
          'Him, I consider as a fool.'

Thus, the picture that begins to emerge is that in the cases where v can be phonologically realized as -*cheng*, the complex head containing v[43] is all linearly adjacent to the functional morpheme of Pred. But why?

Because although the functional morpheme of Pred does not undergo head movement in narrow syntax[44], it is affixed to the complex head it is linearly adjacent to postsyntactically in the PF derivation

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[43]The complex head refers to √-v, in intransitive Res(nP/DP)s/SCcon(nP/DP)s and *ba*-variants of transitives, or √-v-Voice, in (58b) and (59b).

[44]The fact that the particles *zuo* and *wei*, as the exponents of Pred, are not linearly adjacent to the primary predicate in non-*ba*-variants of transitive Res(nP/DP)s/SCcon(nP/DP)s proves that Pred does not raise in narrow syntax.

via an operation that Embick and Noyer (2001, 2007) terms Local Dislocation. Supporting evidence comes from the fact that in those cases where Pred is linearly adjacent to the complex head containing little v, the particles *zuo* and *wei*, as the exponents of Pred, if any, are affixed to the relevant complex head, as shown by the verb-*le* test.

(60)   a.   ***Transitive Res(nP/DP): ba-variant***
      moshushi ba   shoupa   √**bian-v-(zuo/wei)-le** yi-zhi   niao. (adapted from (22a))
      magician BA   handkerchief   change   one-CL bird
      'The magician changed the handkerchief into a bird.'
   b.   ***Transitive SCcon(nP/DP): ba-variant***
      Zhangsan ba kelong-xiangshui √**yong-v-zuo-le** kongqi qingxinji. (adapted from (36a))
      Zhangsan BA Cologne   use   air   freshener
      'Zhangsan used Cologne as an air freshener.'
   c.   ***Intransitive Res(nP/DP)***
      shoupa   √**bian-v-zuo/wei-le** yi-zhi   niao. (adapated from (22b))
      handkerchief   change   one-CL bird
      'The handkerchief changed into a bird.'
   d.   ***Intransitive SCcon(nP/DP)***
      haoxin   √**dang-v-zuo-le** lv-gan-fei. (adapated from (23b))
      good.heart   consider   donkey-liver-lung
      'A kind heart was taken as malice.'
      Lit. 'A good heart was taken as a donkey's liver or lung.'
   e.   ***Topicalization of transitive Res(nP/DP) (non-ba-variant)***
      ta, gongsi   √**tiba-v-Voice-wei-le** dongshizhang. (adapted from (58b))
      he company   promote   chairman.of.the.board
      'Him, the company promoted to the chairman of the board.'
   f.   ***Topicalization of transitive SCcon(nP/DP) (non-ba-variant)***
      ta, wo √**dang-v-Voice-zuo-le** shagua. (adapted from (59b))
      he I   consider   fool
      'Him, I considered as a fool.'

The operation of Local Dislocation, which stems from the device of Morphological Merger proposed in Marantz (1984), applies in terms of linear adjacency, rather than hierarchical structure. As Embick and Noyer (2007:319) puts it, "under specified conditions, this operation effects affixation under adjacency…" We follow Embick and Noyer (2001) in assuming that Local Dislocation is likely to occur concomitant with Vocabulary Insertion, not necessarily after the process of the latter is completed (see Embick and Noyer 2001:561). Leaving aside what its motivations or conditions are, we assume further that the Local Dislocation of Pred involved in the examples above is an operation that operates before Pred and v undergo Vocabulary Insertion, meaning that it targets the relevant morphemes, but not specific Vocabulary Items, unlike canonical cases of Local Dislocation. Therefore, the functional morpheme of Pred will invariably affix to the complex head containing little v once they are linearly adjacent.

    If this is correct, it can be said that in all those cases where v can be phonologically realized as -*cheng*, the functional morpheme of Pred is unexceptionally affixed to the complex head containing little v, forming either (61a) or (61b).

(61)   a.   √-v-Pred
   b.   √-v-Voice-Pred

We are now in a position to answer the question about the contextual conditions under which v can be phonologically realized as the exponent -*cheng*. But before that, we'll have to delete the functional morpheme of Voice in (61b) to make the relevant context identical. This is effected by the following obliteration rule (see Arregi and Nevins 2007).

(62)   Voice → Ø/v___Pred

With (61) and (62), we could say that only when the little v both *immediately* follows a verbal root and *immediately* precedes[45] Pred, can it be phonologically realized as -*cheng*. This can be captured by the following Vocabulary Items for the little v[46].

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[45]See Embick (2015) for definition of the concept of concatenation.

[46]We assume that Vocabulary Insertion proceeds from the inside out. That is, the functional morpheme of v undergoes

(63) Vocabulary Items for v in Mandarin Chinese, Ordered

    a.   v $\leftrightarrow \left\{ \begin{array}{c} \text{-cheng} \\ \text{-Ø} \end{array} \right\}$ /√___Pred

    b.   v $\leftrightarrow$ *-cheng

When the exponent *-cheng* is added to v, the functional morpheme of Pred would have a null exponent: the two morphemes cannot have overt exponents simultaneously; When v has a null exponent, however, what exponent(s) can be added to Pred is partly determined by the individual verbal root, as illustrated by contrasts in (64). This indicates that the morpheme of v is deleted or obliterated immediately after it is phonologically realized as *-Ø*. The Vocabulary Items for the functional morpheme of Pred in Mandarin Chinese are shown in (65).

(64) *Transitive SCcon(nP/DP): ba-variant*

    a.   wo ba ta √**dang-Ø-(zuo/*wei)** shagua. (from (18a'))
           I   BA he   consider   fool
           'I consider him a fool.'

    b.   jingfang ba zhe-qi shijian √**rending-Ø-*zuo/wei** kongbu xiji. (from (36c))
           police   BA this-CL incident designate   terror   attack
           'The police designated this incident as a terrorist attack.'

    c.   renmin ba ta √**shi-Ø-zuo/wei** minzu yingxiong. (from (36f'))
           people BA he   regard   nation hero
           'The people regard him as a national hero.'

(65) Vocabulary Items for Pred in Mandarin Chinese

    a.   Pred $\leftrightarrow$ -Ø/v[-cheng]___

    b.   Pred $\leftrightarrow \left\{ \begin{array}{c} \text{-zuo} \\ \text{-wei} \\ \text{-Ø} \end{array} \right\}$ /√___

In non-*ba*-variants of Res(nP/DP)s/SCcon(nP/DP)s, the functional morpheme of Pred is not concatenated with any other morpheme. In this context, it is most likely to be realized as a null exponent[47], but can also have the exponents *-zuo* or *-wei*, just like *as/for* in English SC constructions.

    In short, the fact that what exponent(s) can be added to the little v, involved in different variants of resultative constructions and SC constructions in Mandarin Chinese, is contextually sensitive but independent of either the (non-)presence of an external argument or the specific frame it is involved in, defies any attempt to posit different flavors of v in narrow syntax: the different "flavors" of v are semantic in nature and narrow syntax is supposed to be autonomous from semantics.
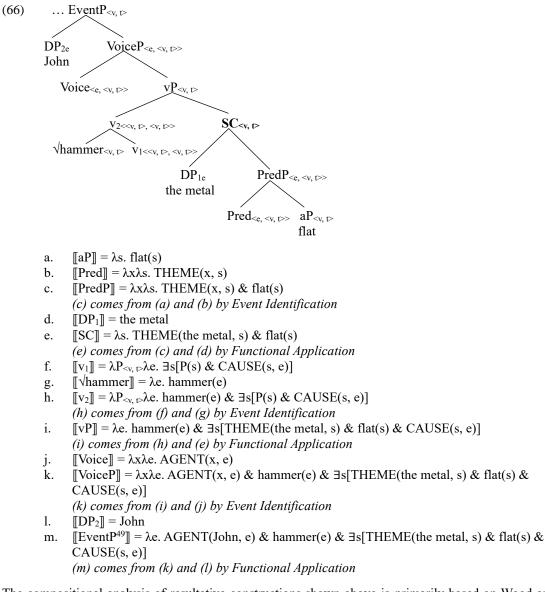
5 Semantic computation

In previous sections, resultative constructions and SC constructions are shown to have the same basic syntactic structure in narrow syntax. However, the problem is that they are clearly two different frames involving different event structures. Again, syntax is autonomous from semantics. Different semantic interpretations at the C-I interface do not necessarily imply different syntactic structures in narrow syntax. As Wood and Marantz (2017:255) puts it, "…the same syntactic structures might express different meanings." Although the two constructions share the same basic syntactic structure in narrow syntax, they do involve different compositional semantics at the C-I interface. On the one hand, the little v can assume different readings at the interface, although it does not have different flavors in narrow syntax. On the other hand, the SCs involved in both constructions can be interpreted differently at the interface. This section focuses on the semantic aspects of these two constructions: 5.1 makes compositional analyses of these two constructions respectively; 5.2 elucidates how semantic computation at the interface is supposed to work.

Vocabulary Insertion before Pred does.

[47]Note that the reason why particles are not found in SCcon(aP)s can be partly attributed to the fact that these particles usually appear in the configuration of √-v-Pred, which does not exist in SCcon(aP)s as they do not permit *ba*-alternation, Voice alternation, or dislocation of the theme DP. As for ComRes, they do not involve the functional morpheme of Pred and thus particles never appear in them. See the analysis of ComRes in section 6.2.

5.1 Compositional semantics of resultative constructions and SC constructions

Let's first consider resultative constructions. Take (1) for instance. Its compositional semantics works as follows[48].

(66)   … EventP$_{<v, t>}$
```
          ┌──────────┴──────────┐
        DP$_{2e}$            VoiceP$_{<e, <v, t>>}$
        John          ┌──────────┴──────────┐
                  Voice$_{<e, <v, t>>}$         vP$_{<v, t>}$
                                    ┌──────────┴──────────┐
                            v$_{2<<v, t>, <v, t>>}$          SC$_{<v, t>}$
                        ┌────────┴────────┐        ┌────────┴────────┐
              √hammer$_{<v, t>}$  v$_{1<<v, t>, <v, t>>}$  DP$_{1e}$       PredP$_{<e, <v, t>>}$
                                         the metal    ┌──────┴──────┐
                                                  Pred$_{<e, <v, t>>}$  aP$_{<v, t>}$
                                                                    flat
```

a. $[\![aP]\!] = \lambda s.\ flat(s)$
b. $[\![Pred]\!] = \lambda x \lambda s.\ THEME(x, s)$
c. $[\![PredP]\!] = \lambda x \lambda s.\ THEME(x, s)\ \&\ flat(s)$
     (c) comes from (a) and (b) by Event Identification
d. $[\![DP_1]\!] = the\ metal$
e. $[\![SC]\!] = \lambda s.\ THEME(the\ metal, s)\ \&\ flat(s)$
     (e) comes from (c) and (d) by Functional Application
f. $[\![v_1]\!] = \lambda P_{<v, t>} \lambda e.\ \exists s[P(s)\ \&\ CAUSE(s, e)]$
g. $[\![√hammer]\!] = \lambda e.\ hammer(e)$
h. $[\![v_2]\!] = \lambda P_{<v, t>} \lambda e.\ hammer(e)\ \&\ \exists s[P(s)\ \&\ CAUSE(s, e)]$
     (h) comes from (f) and (g) by Event Identification
i. $[\![vP]\!] = \lambda e.\ hammer(e)\ \&\ \exists s[THEME(the\ metal, s)\ \&\ flat(s)\ \&\ CAUSE(s, e)]$
     (i) comes from (h) and (e) by Functional Application
j. $[\![Voice]\!] = \lambda x \lambda e.\ AGENT(x, e)$
k. $[\![VoiceP]\!] = \lambda x \lambda e.\ AGENT(x, e)\ \&\ hammer(e)\ \&\ \exists s[THEME(the\ metal, s)\ \&\ flat(s)\ \&$
     $CAUSE(s, e)]$
     (k) comes from (i) and (j) by Event Identification
l. $[\![DP_2]\!] = John$
m. $[\![EventP^{49}]\!] = \lambda e.\ AGENT(John, e)\ \&\ hammer(e)\ \&\ \exists s[THEME(the\ metal, s)\ \&\ flat(s)\ \&$
     $CAUSE(s, e)]$
     (m) comes from (k) and (l) by Functional Application

The compositional analysis of resultative constructions shown above is primarily based on Wood and Marantz (2017:267)[50]. See Wood (2015:22-26) for definitions of the compositional mechanisms invoked here.

   As illustrated by (66f), repeated below as (67), the interpretation of the little v involved in transitive resultatives introduces a causing event, which corresponds to the so-called CAUSE 'flavor'.

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[48]Note that the hierarchical structure does not show the movement of the theme DP as well as that of the agent DP, because they are both interpreted in their base-generated positions at the interface (reconstruction). This is also the case with SC constructions. See below.

[49]The label *EventP* is borrowed from Baker and Travis (1997).

[50]But different from Wood and Marantz (2017), we use *v* for the type of events (see Coppock and Champollion 2021), to avoid confusion with the type of possible worlds *s* involved in the compositional semantics of SC constructions.

(67)   *The denotation of v involved in transitive resultatives*
       $[\![v]\!] = \lambda P_{<v, t>}\lambda e. \exists s[P(s) \& CAUSE(s, e)]$

Accordingly, the interpretation of the little v involved in an intransitive resultative, such as (46a), repeated below as (68), is supposed to introduce a becoming event, corresponding to the so-called BECOME 'flavor'. Its denotation is given in (69). In plain language, it denotes "the event of the result state coming to hold."[51] (Wood and Marantz 2017:271)

(68)   The garage door rumbles open.

(69)   *The denotation of v involved in intransitive resultatives*
       $[\![v]\!] = \lambda P_{<v, t>}\lambda e. \exists s[P(s) \& BECOME(s, e)]$

To take it one step further, consider the following example.

(70)   The store stays open late on Thursdays. (Oxford English Dictionary 2021)

(70) has an interpretation that is related to, although different from, what *canonical* intransitive resultatives express (cf. (68)): it seems to convey solely the (result) state that holds of the referent of the subject. Therefore, the little v involved in (70) should have a denotation as follows:

(71) $[\![v]\!] = \lambda P_{<v, t>}\lambda e. \exists s[P(s) \& BE(s, e)]$

It has a BE-'flavored' semantics, and denotes the event of the holding of the (result) state, rather than that of its coming to hold as in *canonical* intransitive resultatives.

   Let's now turn to SC constructions. Take (2) for instance. Its compositional semantics is given in (72).

(72)   … EventP$_{<v, t>}$

```
                    EventP<v, t>
                   /          \
              DP2e            VoiceP<e, <v, t>>
              John           /         \
                      Voice<e, <v, t>>   vP<e, <v, t>>
                           /                /    \
                  v2<<s, t>, <e, <v, t>>>  SC<v, t> → t → <s, t>
                      /        \          /       \
         √consider<v, t>  v1<<s, t>, <e, <v, t>>>
                                         DP1e      PredP<e, <v, t>>
                                         Mary      /        \
                                          Pred<e, <v, t>>   aP<v, t>
                                            (as)           intelligent
```

a. $[\![aP]\!] = \lambda s. intelligent(s)$
b. $[\![Pred]\!] = \lambda x\lambda s. THEME(x, s)$
c. $[\![PredP]\!] = \lambda x\lambda s. THEME(x, s) \& intelligent(s)$
     (c) comes from (a) and (b) by Event Identification
d. $[\![DP_1]\!] = Mary$
e. $[\![SC]\!] = \lambda s. THEME(Mary, s) \& intelligent(s)$
     (e) comes from (c) and (d) by Functional Application
f. $[\![SC]\!] = \exists s[THEME(Mary, s) \& intelligent(s)]$
     (f) comes from (e) by existential quantification of the event argument built into the epistemic modality operator introduced in SC Constructions. The same operator triggers a switch from the extension (f) to intension (g)[52] (see Heim and Kratzer 1998:308-309):
g. $\lambda w. [\![SC]\!]^w = \lambda w. \exists s[THEME(Mary, s) \& intelligent(s)]$ in w
h. $[\![v_1]\!] = \lambda p_{<s, t>}\lambda x\lambda e. \forall w'[[w' \in W^{53}$ & w' is compatible with the attitude of x in the actual

---

world]→[p(w')=1 & DO(p(w'), e)]]

i. ⟦√consider⟧ = λe. consider(e)

j. ⟦v₂⟧ = λp$_{<s, t>}$λxλe. consider(e) & ∀w'[[w' ∈ W & w' is compatible with the attitude of x in the actual world]→[p(w')=1 & DO(p(w'), e)]]
(j) comes from (h) and (i) by Event Identification

k. ⟦vP⟧ = λxλe. consider(e) & ∀w'[[w' ∈ W & w' is compatible with the attitude of x in the actual world]→[∃s[THEME(Mary, s) & intelligent(s)] in w'=1 & DO(∃s[THEME(Mary, s) & intelligent(s)] in w', e)]]
(k) comes from (j) and (g) by Intensional Functional Application (see Heim and Kratzer 1998:308)

l. ⟦Voice⟧ = λxλe. AGENT(x, e)

m. ⟦VoiceP⟧ = λxλe. AGENT(x, e) & consider(e) & ∀w'[[w' ∈ W & w' is compatible with the attitude of x in the actual world]→[∃s[THEME(Mary, s) & intelligent(s)] in w'=1 & DO(∃s[THEME(Mary, s) & intelligent(s)] in w', e)]]
(m) comes from (l) and (k) by Predicate Conjunction

n. ⟦DP₂⟧ = John

o. ⟦EventP⟧ = λe. AGENT(John, e) & consider(e) & ∀w'[[w' ∈ W & w' is compatible with the attitude of John in the actual world]→[∃s[THEME(Mary, s) & intelligent(s)] in w'=1 & DO(∃s[THEME(Mary, s) & intelligent(s)] in w', e)]]
(o) comes from (m) and (n) by Functional Application

The compositional analysis of SC constructions shown above builds on Heim and Kratzer (1998: 306-309). See Heim and Kratzer (1998: 299-309) for an introduction to the intensional semantics and the relevant concepts or terms invoked above.

(72h), repeated below as (73), shows that the interpretation of the little v involved in transitive SC constructions introduces a DO-'flavored' semantics.

(73)   *The denotation of v involved in transitive SC constructions*
⟦v⟧ = λp$_{<s, t>}$λxλe. ∀w'[[w' ∈ W & w' is compatible with the attitude of x in the actual world]→[p(w')=1 & DO(p(w'), e)]]

As is the case with resultative constructions, the (non-)presence of an external argument in SC constructions should also lead to different denotations of the little v. For instance, the little v involved in the intransitive SC construction (12), repeated below as (74), is supposed to have a BE-'flavored' semantics, rather than DO-'flavored' semantics. Its denotation should look like (75).

(74)   John seems mad.

(75)   *The denotation of v involved in intransitive SC constructions*
⟦v⟧ = λp$_{<s, t>}$λxλe. ∀w'[[w' ∈ W & w' is compatible with the attitude of x in the actual world]→[p(w')=1 & BE(p(w'), e)]]

Different from resultative constructions, however, the denotation of the little v involved in either transitive or intransitive SC constructions introduces a variable *x*. The assignment of value to this variable determines to whom the "attitude" is ascribed[54].

Note that the little v involved in intransitive SC constructions, such as (74), and the one involved in (70) have similar semantics in one aspect: both introduce a BE-'flavored' semantics (cf. (75) and (71) respectively). In view of this, we could perhaps treat copular particles as lexicalizations of the little v. Or technically speaking, when the little v is *not* immediately adjacent to any other morphemes (either verbal roots or functional morphemes), it will surface as a copular particle, which can be of various forms in English depending on its local context[55]. Witness the contrast below.

(76)   a.   John is a fool.
        b.   John is a teacher.

(76a) can be classified as an intransitive SC construction, which is concerned with the speaker's attitude

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[54]For transitive SC constructions, the "attitude" is generally ascribed to the referent of the external argument (cf. footnote 28), and for intransitive ones, it is ascribed to the speaker, as in (74), or any other person, as in the Chinese examples (23b) and (24b).

[55]An alternative is perhaps to treat the copular particle as the portmanteau realization of v and Pred, with the latter assumed to have been "incorporated" into v. But this is beyond the scope of this article.

rather than fact. In contrast, (76b) does express a state that holds in the actual world. The difference in interpretation between these two copular constructions reflects the different denotations of the copular particles, namely the little v, involved in them: the one involved in (76a) has the semantics in (75) and the one in (76b) has the denotation in (71).

5.2 The free nature of semantic computation

As Chomsky (2019:58) puts it, "[Formal semantics] has not sought to find genuine explanations, … addressing the problems of learnability and evolvability. There is little effort to ask what's the simplest way to proceed. The goal has been to find some means to accomplish the task at hand." The picture so far allows us to investigate the way that semantic computation works at the C-I interface. As argued by Chomsky (2019), formal semantics, including event semantics, is "pure syntax."[56] In line with this, semantic computation is supposed to proceed in a free way at the C-I interface, just as External Merge/Internal Merge operates freely in narrow syntax (cf. Chomsky 2015). No stipulative conditions should be imposed upon the semantic computation at the interface. The undesirable computation will be filtered out in terms of properties of the interface. On the one hand, each semantic derivation is randomly assigned a specific denotation of the little v. The compositional analyses in Section 5.1 show that the little v varies in interpretation across different constructions. But there is no need to posit different flavors of the little v in narrow syntax, as they do not play any role there. Rather, they are required only at the C-I interface, which could determine by itself the appropriate interpretation of the little v. On the other hand, each potential semantic derivation is supposed to apply freely to the structural input from narrow syntax. Evidence supporting this assumption comes from the fact that some expressions are found ambiguous between a resultative reading (being a resultative) and an SC reading (being an SC construction), indicating that the two modes of semantic derivations involved in the interpretation of resultatives and SC constructions, which yield the configurational meanings of (caused) change of state and attitude ascription respectively, both apply to the same structural input from narrow syntax. For instance, as mentioned in Section 4.2, each variant of Res(nP/DP) and SCcon(nP/DP) in Mandarin Chinese follows exactly the same pattern (cf. Table 2). The pattern of the *ba*-variant is repeated below.

(77) DP_{EA} ba $DP_{Theme\ DP}$ V_{Pr1}- $\begin{Bmatrix} \text{cheng} \\ \text{zuo} \\ \text{wei} \\ \text{Ø} \end{Bmatrix}$ nP/DP_{Pr2}

What is interesting is that sometimes the same expression of the pattern above could simultaneously have two readings: a resultative reading and an SC reading.
    Consider the following examples.

(78)   ta   neng   ba   hei-de   shuo-cheng   bai-de.
        he   can   BA   black-DE   say-CHENG   white-DE
        a.   SC reading: 'He is likely to describe what is black as being white.'
        b.   Resultative reading: 'He could change a black thing into a white one by talking.'

(79)   Zhangsan   hui   ba   Lisi   ma-cheng   baichi   de
        Zhangsan   will   BA   Lisi   scold-CHENG   idiot   DE
        a.   SC reading: 'Zhangsan would condemn Lisi as an idiot.'
        b.   Resultative reading: 'Zhangsan would change Lisi into an idiot by swearing at Lisi.'

The two examples above have been considered as speech-type SC constructions (cf. (18d) and (18b')), as they both involve speech verbs as the primary predicate. With this reading, they can be translated as (78a) and (79a) respectively. Yet, both of them have an additional resultative reading, which can be interpreted as (78b) and (79b) respectively. Take (78) for instance. With these two different readings, it can be used in different contexts.

(80)   a.   SC reading: Don't trust what he says. **ta neng ba hei-de shuo-cheng bai-de**.
        b.   Resultative reading: He is good at talking. **ta neng ba hei-de shuo-cheng bai-de**.

---

[56]"If you look at what's called formal semantics, some of the richest and most exciting work going on in the field in a last couple of decades, notice that it's pure syntax: symbolic manipulations of postulated entities that are not part of the mind-independent world, whatever their real-world motivation." (Chomsky 2019:57); "… So event semantics is again another form of syntax" (Chomsky 2019:59)

Consider another example.

(81)   ta ba pengpengche kai-cheng-le   saiche.
           he BA bumper.car   drive-CHENG-LE racing.car

The example above also has two readings. With the resultative reading, it literally means (82a), which can be further paraphrased as (82b), and can be used in the context (83).

(82)   a.   'He changed the bumper car into a racing car by driving.'
           b.   'He drove the bumper car at the speed of a racing car.'

(83)   How fast! **ta ba pengpengche kai-cheng-le saiche**!

With the SC reading, (81) can be paraphrased as (84), where the part printed in boldface is a canonical attitude-type SC construction, and can be used in the context (85).

(84)   ta **ba pengpengche dang-cheng   saiche** kai   le.
           he BA bumper.car   consider-CHENG racing.car drive LE
           'He perceived the bumper car as a racing car in driving it.'

(85)   The first time the racing driver drove a bumper car, **ta ba pengpengche kai-cheng-le saiche**.

English causative sentences with *get* or *let* followed by a DP (theme DP) and a nonverbal predicate, as illustrated by the part printed in boldface in (86a-b), could also be ambiguous between a resultative reading and an SC reading. This ambiguity can be detected via depictive modification[57]. Bruening (2018) shows that when a depictive, such as *fully dressed* in (86a) and *naked* in (86b), modifies the theme DP in such causative sentences, we could get two readings. Take (86a) for instance. In one reading, the depictive *fully dressed* characterizes the referent of the theme DP *the soldiers* during the nonverbal event. That is, the soldiers only become fully dressed when they are on the parade ground. In a second reading, the depictive characterizes the referent of the theme DP during the verbal event. That is, "the officer harries the soldiers to the parade ground while they are fully dressed." (Bruening 2018:550)

(86)   a.   **The officer got the soldiers on the parade ground** *fully dressed*.
           b.   **We can't let adults on the playground** *naked*.
           (Bruening 2018:550)

It happens that the two readings above correspond to what we get when a depictive modifies the theme DP in an SC construction and in a resultative respectively. When a depictive modifies the theme DP in an SC construction, we get the first reading above: it characterizes the referent of the theme DP only during the nonverbal event and not during the verbal event. For instance, in (87), the soldiers are not necessarily fully dressed during the wanting event. And when a depictive modifies the theme DP in a resultative, we get the second reading above: the depictive characterizes the referent of the theme DP during the verbal event (causing event) and not exclusively during the nonverbal event (the result state), as shown by the contrast in (88).

(87)   I want [the soldiers on the parade ground *fully dressed*]!
           (Bruening 2018:549)

(88)   a.   It's best to hammer metal flat *wet*, but it's OK if it has dried by the time it's completely flat.
           b.   #It's best to hammer metal flat *dry*, but it's wet during the hammering.
           (Bruening 2018:540-541)

It could thus be inferred that the causative sentences with *get* or *let* followed by a DP and a nonverbal predicate are ambiguous between a resultative reading and an SC reading, just like those Chinese examples (78), (79), and (81).

However, it is clearly not the case that any resultative construction has an additional SC reading, or vice versa, in any specific context. In most cases, they do not. Witness the contrasts below.

(89)   a.   Mary drove John crazy. (resultative reading only)

---

[57]A depictive is an adjective that describes a state that holds of an individual during an event. For instance, in the following example, the depictive *raw* characterizes the referent of the object DP *the meat* during the event denoted by the verb *eat*. That is, the meat is raw throughout the event of eating.

(i)   John ate the meat *raw*.
        (Pylkkänen 2002:26)

b. Mary considers John crazy. (SC reading only)
(Folli and Harley 2006:138)

(90) a. It turns cold. (resultative reading only)
b. It seems cold. (SC reading only)

This is the direct result of the interplay between the truth conditions imposed by the corresponding semantic derivations, the lexical semantics encoded by the verbal root (root of the primary predicate), and the real-world knowledge (see Borer 2005; Ramchand 2008)[58]. That is, the meanings of (caused) change of state or attitude ascription, yielded by the relevant modes of semantic derivations, combined with the encyclopedic knowledge of verbal roots, should be compatible with the relevant real-world knowledge[59]. As Borer (2005:6) puts it, "…we would expect it to be possible for world knowledge associated with the meaning of some concepts to render some argument structure combinations infelicitous." But this is not a restrictive constraint that the semantic derivations at the interface are required to satisfy. Rather, they apply freely. In the cases where the interpretation generated at the interface combined with the encyclopedic knowledge of verbal roots conflicts with the real-world knowledge, gibberish will be engendered and the corresponding semantic derivation will be ruled out.
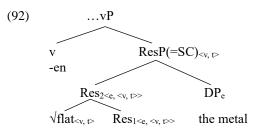
6 Modifying the result state

6.1 Lexical causatives/inchoatives: resultative predicate as a Res head

Lexical causatives/inchoatives are different from resultative constructions on the surface in that the former has only a single overt predicate.

(91) a. ***Lexical causative***
John flattened the metal.
b. ***Inchoative***
The metal flattened.

Yet, like resultatives, lexical causatives/inchoatives are also interpreted as expressing a (caused) change of state and encoding a causing/becoming event as well as a result state. We assume that the syntactic structures of lexical causatives/inchoatives also involve an SC, the predicate of which is a phonetically null head. We'll call it Res, a mnemonic for result. The verbal root Direct Merges with the Res head, denoting the manner of the result state. Take (91) for instance. The structure that underlies both of the two sentences is shown below.

(92)

$$\ldots vP$$

v
-en

$ResP(=SC)_{<v,\,t>}$

$Res_{2<e,\,<v,\,t>>}$

DP_e

$\sqrt{flat}_{<v,\,t>}$ $Res_{1<e,\,<v,\,t>>}$ the metal

According to Embick and Marantz (2008), every root must be categorized by combining with a category-defining head. Otherwise, it could not be pronounced or interpreted. This is formulated as Categorization Assumption in the following terms.

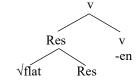(93) *Categorization assumption*
Roots cannot appear (cannot be pronounced or interpreted) without being *categorized*; they are categorized by merging syntactically with category-defining functional heads…
(Embick and Marantz 2008:6) (italics original)

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[58]The denotations of other constituents embedded within that expression also play a role. For instance, the different interpretations of the two copular constructions in (76) result from their different nP predicates.

[59]The real-world knowledge should include the relevant contextual information (cf. Hu 2018:53). For instance, the ambiguous expressions (78) and (81) above are disambiguated in specific contexts.

Thus, the complex head containing the root of the secondary predicate √*flat*, raises to v in narrow syntax (Internal Merge) to categorize it. The new complex head thus formed is shown below.

(94)

```
              v
          ╱       ╲
       Res          v
      ╱    ╲        -en
   √flat    Res
```

The subsequent derivations for lexical causatives and inchoatives proceed in the same way as those for transitive and intransitive resultatives respectively. See Section 4.1.

In the analysis above, the verbal root involved in lexical causatives/inchoatives, usually called "state/result root" as opposed to "manner root" (see Embick 2004; Rappaport and Levin 2010; Alexiadou and Lohndal 2017), does not function as the resultative predicate, but as a modifier of the result state[60] (see also Marantz 2013), just as the root of the primary predicate modifies the event introduced by v in either resultative constructions or SC constructions, contra Embick (2004), which analyzes state/result roots as complements of v, as well as Harley (2005, 2008), Copley and Harley (2015), and Folli and Harley (2020), which treat state/result roots as "the predicate of result". It is the Res head that functions as the resultative predicate. Note that the difference between the Res head proposed here and the functional head of Pred involved in the structures of both resultative constructions and SC constructions is that the former not only introduces an argument (the theme DP) but also functions as an SC predicate, whereas the latter is only an argument introducer[61]. Accordingly, the denotation of Res should be as follows.

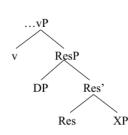(95)   ⟦Res₁⟧ = λxλs. THEME(x, s) & STATE(s)

The compositional semantics for the SC part works in the following way.

(96)   a.   ⟦√flat⟧ = λs. flat(s)
        b.   ⟦Res₂⟧ = λxλs. THEME(x, s) & STATE(s) & flat(s)
              (96b) comes from (95) and (96a) by Event Identification
        c.   ⟦SC⟧ = λs. THEME(the metal, s) & STATE(s) & flat(s)

The subsequent semantics works in the manner of resultatives. See Section 5.1.

The above syntactic and semantic analyses of lexical causatives/inchoatives are different from those

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[60]Thus, it could be said that all verbal roots are actually event modifiers: whereas the "manner root" modifies the event introduced by v as in resultative constructions and SC constructions, the "state/result root" modifies the result state as in lexical causatives/inchoatives. See Section 3.2.2.

[61]Note also that the functional head of Res postulated here is different from the one involved in the structure that Folli and Harley (2020), building on the syntactically represented event structure proposed in Ramchand (2008), provides for resultative constructions, lexical causatives, and other related constructions, which is roughly as follows.
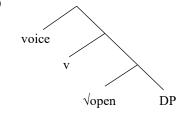
(i)

```
            …vP
          ╱     ╲
        v         ResP
               ╱       ╲
             DP          Res'
                       ╱      ╲
                     Res        XP
```

XP could be aP, PP, or Root. The ResP in the tree above roughly corresponds to what is analyzed as PredP by this article. As Folli and Harley (2020:448) puts it, "The ResP category is equivalent to what Harley (2005) treats as a 'small clause'…". As has been argued above, both resultative constructions and SC constructions contain the SC=PredP, which, under the assumption that syntax is autonomous, should not be distinguished in narrow syntax. The difference between them is semantic in nature. Thus, the SC involved in the syntactic structure of resultative constructions should not be independently treated as a ResP. We'll argue in the next subsection that the syntactic structure of ComRes in Mandarin Chinese also involves the Res head proposed by this article for the structure of lexical causatives/inchoatives. As SC constructions do not license a null SC predicate, treating the phonetically null SC predicate involved in the structures of lexical causatives/inchoatives in English and ComRes in Mandarin Chinese as a Res head would not contradict the assumption that syntax is autonomous.

proposed by Marantz (2013) and Wood and Marantz (2017), which do not rely on a null Res head. Instead, Marantz (2013:158) provides the following structure for a lexical causative, where the verbal root adjoins to the DP directly.

(97)

```
        voice
       /    \
      v      \
           /    \
        √open    DP
```

open the door

And according to Wood and Marantz (2017:271), the semantics computed from the structure above needs a coercion rule (98) such that the theme DP is interpreted as a result state.

(98) $[\![DP]\!] \rightarrow STATE([\![DP]\!]) = (\lambda x \lambda s. \, state(s, x))([\![DP]\!])$

However, positing a Res head is independently motivated. Sybesma (1997) argues convincingly that the verb-*le* in Mandarin Chinese could function as resultative predicate. This is corroborated by the *ba*-alternation test. Recall that the involvement of an SC is what licenses the relevant construction to participate in *ba*-alternation (cf. Section 3.1.2). Compare the pair of sentences in (19a-a'), repeated below as (99a-a'), with (100a-a').

(99)   a.   ***Non-ba-variant***
            Zhangsan jingchang dasao   fangjian.
            Zhangsan often   sweep   room
       a'. ***Ba-variant***
            *Zhangsan jingchang ba   fangjian dasao.
             Zhangsan often   BA   room   sweep
            Both a and a': 'Zhangsan often sweeps the room.'

(100) a.   ***Non-ba-variant***
            Zhangsan zuotian   dasao-**le**   fangjian.
            Zhangsan yesterday sweep-LE   room
       a'. ***Ba-variant***
            Zhangsan zuotian   ba   fangjian dasao-**le**.
            Zhangsan yesterday BA   room   sweep-LE
            Both a and a': 'Zhangsan cleaned up the room yesterday.'

The data above indicates that the verb-*le* does constitute an SC predicate. In this light, the verb-*le* could be viewed as lexicalizing the Res head, a plausible assumption. And it is equally plausible to analyze those particles in verb-particle constructions in English also as the same functional head.
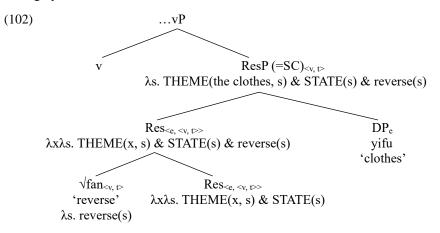
6.2 Compound resultatives in Mandarin Chinese

ComRes appear to often violate the DOR. As shown by the examples (15a-b) in Section 3.1.1, the secondary predicate of ComRes can be predicated of the external argument. Moreover, sometimes it may even predicate a property of neither the external argument nor the theme DP. Consider the following examples.

(101) a.   ta   [Pr1 da]-[Pr2 **cuo**]-le   [Theme DP na-dao   ti].
            he   answer-wrong-LE   that-CL question
            'He answered that question wrong.'
       b.   ta   chuan-**fan**   yifu   le.
            he   wear-reverse   clothes LE
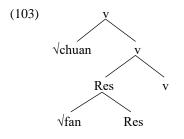   'He wore his clothes in reverse.'

In the examples above, the secondary predicates, namely *cuo* 'wrong' in (101a) and *fan* 'reverse' in (101b), are predicated of neither the subjects nor the direct objects. For instance, *cuo* 'wrong' in (101a) seems to describe a property of an implicit resulting object, namely the resulting answer to *na-dao ti* 'that question'.

With the technical mechanism introduced in the previous subsection, the "apparent" nature of ComRes violating the DOR, as illustrated by (15) and (101), can be easily disclosed. We propose that ComRes in Mandarin Chinese also contain an SC that involves a Res head and a root modifier (secondary predicate), similar to lexical causatives/inchoatives in English (91). Take (101b) for instance. Its syntactic structure is roughly as follows.

(102)

$\dots$vP
 ├── v
 └── ResP (=SC)$_{<v, t>}$
      λs. THEME(the clothes, s) & STATE(s) & reverse(s)
       ├── Res$_{<e, <v, t>>}$
       │   λxλs. THEME(x, s) & STATE(s) & reverse(s)
       │   ├── √fan$_{<v, t>}$
       │   │   'reverse'
       │   │   λs. reverse(s)
       │   └── Res$_{<e, <v, t>>}$
       │   λxλs. THEME(x, s) & STATE(s)
       └── DP$_e$
            yifu
            'clothes'

The true resultative predicate of ComRes is not the secondary predicate but the Res head. The root of the secondary predicate functions as a (manner) modifier of the result state. As an event modifier, it does not have to be predicated of the theme DP, just like the root of the primary predicate, as the modifier of the causing/becoming event, does not necessarily bear any semantic relations to the theme DP or the external argument (cf. Section 2.1). It is in this way that the validity of the DOR is maintained.

According to the categorization assumption (93), the root of the secondary predicate needs categorizing. Thus, the complex head containing the root, namely <√*fan*, Res>, raises to v (Internal Merge). The fact that in resultative compounds, the primary predicate always precedes the secondary predicate indicates that the head movement takes place before the root of the primary predicate Direct Merges with v[62]. The complex head formed after the Direct Merge is shown below.

(103)

v
 ├── √chuan
 └── v
      ├── Res
      │   ├── √fan
      │   └── Res
      └── v

In transitive ComRes (non-*ba*-variant), the complex head (103) further raises to Voice, so that the whole complex head containing both the root of the primary predicate and that of the secondary predicate precedes the theme DP in surface order, as illustrated in (104). Compare it with the Local Dislocation of Pred, which operates in terms of linear adjacency.

(104) [$_{CP}$ ...ta [$_{VoiceP}$ <<√**chuan**, <<√**fan, Res>, v>>, Voice**>** [$_{<φ, φ>}$ [Theme DP **yifu**] [$_{vP}$ ~~<√chuan, <<√fan,~~ ~~Res>, v>>~~ [$_{ResP}$ ~~<√fan, Res>~~ [Theme DP ~~yifu~~]]]]]]

If the analysis above is on the right track, then ComRes in Mandarin Chinese provides a case where both the causing/becoming event and the result state involve a root modifier.
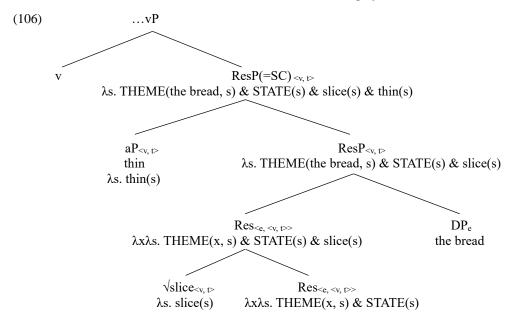
6.3 Pseudo-resultatives

Pseudo-resultative is "a predicate that does not delimit the change undergone by the Theme but rather describes a property of the resulting object named by the verb root." (Folli and Harley 2020:442). For instance, the adjectives *thin* in (105a) and *tight* in (105b) are both pseudo-resultatives.

(105) a.   The baker sliced the bread thin.

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[62]See Yang (2018) for more elaborations.

b. She braided her hair tight.
(Folli and Harley 2020:442)

Pseudo-resultatives are also in apparent violation of the DOR. In line with the discussions above, pseudo-resultatives, which have been assumed to be akin to adverbials in Washio (1997), Mateu (2000), and Kratzer (2005), could also be analyzed as adjunct modifiers of the result state. As Parsons (1990:121) puts it, "… the typical indication of state modification as opposed to event [activity] modification is the appearance of the modifier as an adjective instead of an adverb." Take (105a) for instance. Its syntactic structure and the denotations of the relevant constituents are roughly as follows.

(106)　　　　　…vP

v

ResP(=SC) $_{<v, t>}$
λs. THEME(the bread, s) & STATE(s) & slice(s) & thin(s)

aP $_{<v, t>}$
thin
λs. thin(s)

ResP $_{<v, t>}$
λs. THEME(the bread, s) & STATE(s) & slice(s)

Res $_{<e, <v, t>>}$
λxλs. THEME(x, s) & STATE(s) & slice(s)

DP $_e$
the bread

√slice $_{<v, t>}$
λs. slice(s)

Res $_{<e, <v, t>>}$
λxλs. THEME(x, s) & STATE(s)

7 Conclusions

By a crosslinguistic comparison between resultative constructions and SC constructions, this article has explicated not only the syntactic structures but also the semantic interpretations of both constructions, contributing to a better understanding of how argument structure is fundamentally constructed, clarifying the way that semantic computation works at the C-I interface. It has shown that these two constructions share an SC-containing functional syntactic structure in narrow syntax, but this functional structure is interpreted via different semantic composition rules at the interface, thus giving rise to different configurational meanings, namely the meaning of (caused) change of state and the semantics of attitude ascription respectively. By capitalizing on the ambiguity between a resultative reading and an SC reading displayed by some expressions either in Mandarin Chinese or in English, it proposed that different semantic derivations are supposed to apply freely to the same structural input from narrow syntax. The conclusion drawn by this article that the two constructions have the same syntactic structure but express different meanings is an instantiation of the idea that syntax is autonomous from semantics, which also gains support from the analysis of the particles involved in both constructions in Mandarin Chinese.

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