A comparative analysis of resultative verbal compounds in Chinese and Japanese: Compounding in syntax and lexicon

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1. Introduction

How does natural language describe the world we live in? Vendler (1967) examines the semantics of verbs and postulates four types of verbal events. Since then, many scholars have observed that these four types of verbal events may constitute causal chains with actions and results.

(1)   Causal chain:
        <ACT> + <CAUSE> + <BECOME>

In this paper, we will look at how the causal chain is realized in the morpho-syntactic structure of natural language. So let us compare Japanese, which is a morpho-typologically complex language, with Thai, which is a morpho-typologically simple language. Compare (2) and (3).

(2)   a.   Taro-wa   tori-o   uchi-otoshi   -ta.
                Taro-TOP   bird-ACC   shoot-drop   PAST
                'Taro shot down a bird.'
        b.   *Taro-wa   tori-o   uchi-ochi   -ta
                 Taro-TOP   bird-ACC   shoot-come.down   PAST
                '[Same as (2a)]'
(3)   a.   sŏmchaay   săk   sɯɯa   sàʔàat
                somchaay   wash   undershirt   clean
                'Somchaay washed the shirt, and as a result the shirt became clean.'
        b.   sŏmchaay   săk   sɯɯa   hây   sàʔàat
                somchaay   wash   undershirt   GIVE   clean
                'Somchaay washed the shirt, and as a result caused the shirt to become clean.'   (Cf. Uehara & Thepkanjana 2009:378)

(4)   a.   The resultative construction in Japanese

                       V1(<ACT>)-V2(<CAUSE <BECOME>>)

            b.   The resultative construction in Thai

                       VP1(<ACT>)＋VP2(<BECOME>)

If the different ways of building resultative constructions in Japanese and Thai arise from their respective morpho-syntactic properties, then we would predict that Chinese, which is like Thai in being a morphologically simple language, should exhibit the pattern of (4b). However, the fact is quite the opposite.

(5)   a.   Wusong   da-si   -le   yi-zhi   laohu.

                       Wusong   hit-die   -PERF   one-CL   tiger

                       'Wusong hit a tiger dead.'

            b.   *Wusong   da-sha   -le   yi-zhi   laohu.

                       Wusong   hit-kill -PERF   one-CL   tiger

                       '[Same as (5a)]'

If we compare the Japanese examples in (2) with the Chinese examples in (5), we find that Japanese only permit merger of the pattern [action verb + causative verb], whereas Chinese only permits the pattern [action verb + change of state verb]. The common feature they share, though, is that they make the two verbs into a verbal compound. When we compare the Thai examples in (3) and the Chinese examples in (5), we find that the first verb and the second verb in Thai are syntactically separate, but in Chinese they are compounded together. The two languages share the common feature that they only permit the pattern [action verb + change of state verb].
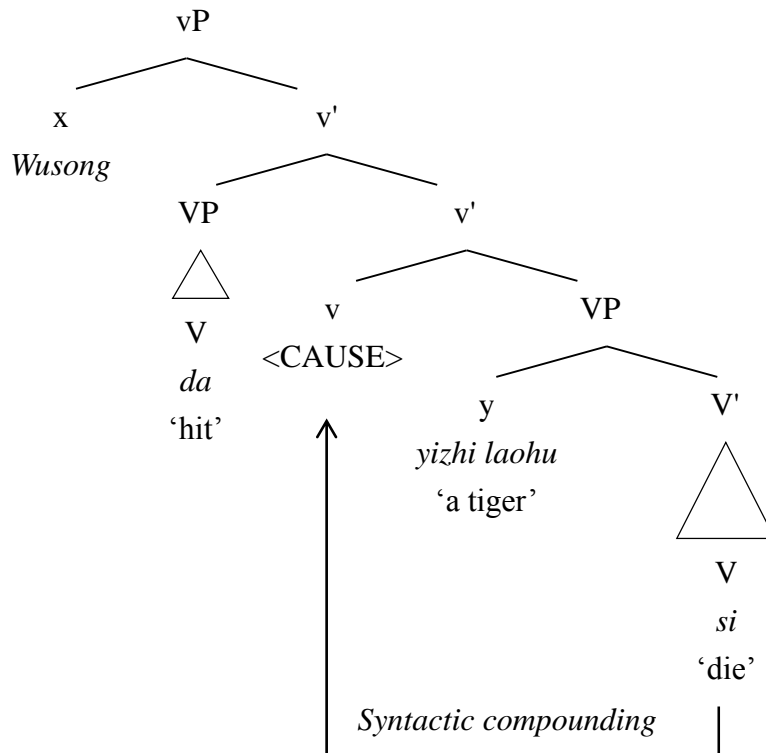
(6) Two questions:

    A. Why it is that V1 and V2 in Chinese are compounded like the verbal compounds in Japanese, yet <CAUSE> cannot occur in the Chinese verbal compounds?

    B. Why it is that Chinese patterns with Thai in having an action verb and a change of state verb in the resultative construction, but V1 and V2 in Chinese cannot be separated?
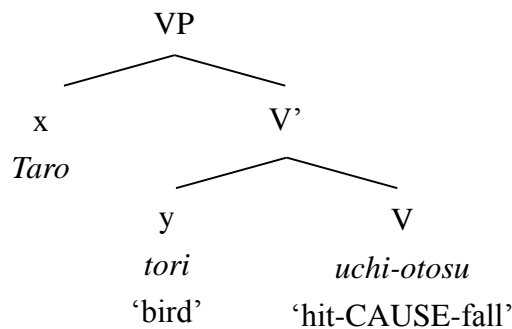
(7) Our proposal: (cf. Shen and Lin 2003, 2009)

    A. Japanese and Chinese shares the property of expressing the causal chain by means of compounding: [ACT-CAUSE-BECOME]

    B. But they differ in two respects.

a. Different grammatical levels for compounding:

Japanese: at the lexical level, Chinese: at the syntactic level.

b. Different morphological realizations for <CAUSE>:

<CAUSE> in Japanese is overt, <CAUSE> in Chinese is covert.

(8) a. Syntactic structure of the Chinese resultative construction

```
                          vP
                    ┌──────┴──────┐
                    x             v'
                 Wusong      ┌────┴────┐
                            VP         v'
                            △     ┌────┴────┐
                            V     v        VP
                            da  <CAUSE>  ┌──┴──┐
                           'hit'        y      V'
                                    yizhi laohu △
                                     'a tiger'  V
                                                si
                                               'die'
```

Syntactic compounding

b. Syntactic structure of the Japanese resultative construction

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                     VP
               ┌─────┴─────┐
               x           V'
             Taro     ┌─────┴─────┐
                      y           V
                     tori     uchi-otosu
                    'bird'  'hit-CAUSE-fall'
```

2. Evidence 1: <CAUSE> in ancient Chinese

In this section, we compare the cases of the ancient Chinese and the modern dialects, and argue that <CAUSE> exists in the Chinese RVC as a covert predicate.

(9) Before Christ, (Cf. Liang 2001, Li 2003)

余	助	苗	长	矣
Yu	zhu	miao	zhang	yi.
ISG	help	seedling	grow	SFP

'I help the seedling to grow.'

(I *Gongsunchou, Mengzi*; BC)

(10) The northern Wei period (386-534 AD), (Cf. Ota 1958, Li 1987, Jiang 1999)

a.
今	當	打	汝	前	两	齒	折。
Jin	dang	da	ru	qian	liang	chi	she
now	must	hit	2SG	front	two	tooth	break

'Now [one] should hit you and break two of your front teeth.'

(*Xianyu-jing*, 428c)

b.
汝	何	以	輒	打	折	其	脚?
Ru	he	yi	zhe	da	she	qi	jiao
2SG	what	with	then	hit	break	that	foot

'Why do you then break his foot?'

(Xianyu-jing 428c)

We should ask a question: How is the compounding type of resultative construction such as *da-she* 'hit break' derived from the separation type? (Cf. Furuya 1985, 2005)

(11)   [Vt-CAUSE-Vi]

攪	使	調和	
jiao	shi	tiaohe	(8-71-558)
stir	CAUSE	mix	

'to stir [something] and cause it to be fully mixed'

(12)   [Vt-Object-CAUSE-Vi]

温	酒	令	暖	
wen	jiu	ling	nuan	(5-52-367)
warm	wine	CAUSE	warm	

'to warm the wine and cause it to become warm'

(13)   [Vt-CAUSE-Subject-Vi]

攪和	令	飯	散	
jiaohuo	ling	fan	san	(7-65-501)
mix	CAUSE	rice	scatter	

'to mix the rice and cause it to scatter'

(14)   [Vt-Vi-Object]

       踏   破   地皮

       ta   po   dipi   (3-17-181)

       step   break   ground

       'to step and break the ground'

(15)   The evolution of the expression of the causal chain in Chinese

    a.   The separation type   \<ACT> + \<y BECOME>

                                            ↓

    b.   Insertion of CAUSE   \<ACT> + \<CAUSE \<y BECOME>>

                                            ↓

    c.   Compounding in syntax \<ACT>-\<CAUSE-BECOMEi \<y Øi >>

Our proposal receives support from the southern Min dialect. (Cf. Cheng et al. 1999, Shen and Lin 2009).

(16) a. Li   na   tsau,   gua   toh   pha   ho   i/li   si.

        you   if   leave   I   then   hit   cause   he/you die

        'If you leave, I will hit him/you to death.'

    b. ?Li   na   tsau,   gua   toh   pha-si i/li .

        you   if   leave   I   then   hit-die he/you

        '[Same as (16b)]'

This indicates that the dialect of southern Taiwan is the same as the Chinese language spoken in the northern Wei period -- that is, the event predicate \<CAUSE> must be inserted between V1 and V2. Let us summarize the findings so far:

(17) [no CAUSE] → [overt CAUSE] → [covert CAUSE]

3. Evidence 2: \<CAUSE> in the modern Chinese

       If the resultative construction in Chinese contains a covert \<CAUSE>, then we predict that the argument that the change of state verb applies to must be a causee, not a causer. This is equivalent to the Direct Object Restriction in English (Cf. Simpson 1983, Levin and Rappaport Hovav 1995).

(18) a.   Zhangsan   chao-fan   -le   Lisi.
            Zhangsan   make.noise-disturbed   -PERF Lisi
            'Zhangsan made noises and as a result Lisi was disturbed.'
      b.   Zhangsan   kan-dao -le   da   shu.
            Zhangsan   cut-fall -PERF big   tree
            'Zhangsan cut the big tree and caused it to fall.'
(19) a.   Zhangsan   chang   ge   chang-fan   le.
            Zhangsan   sing   song   sing-disturbed PERF
            'Zhangsan sang songs, and as a result got disturbed.'
      b.   Zhangsan   chang   ge   chang-fan   le   taziji.
            Zhangsan   sing   song   sing-disturbed PERF   himself
            'Zhangsan sang songs, and as a result got himself disturbed.'

However, we have sentences that appear to be counterexamples to this generalization.

(20) Zhangsan   xue-fan   Yingyu. -le.
      Zhangsan   study-disturbed English -PERF
      'Zhangsan studied English and as a result he got disturbed.'

In (20), the change of state verb does not apply to the object NP *Yingyu* 'English', but to the subject NP *Zhangsan*. Thus (20) seem to be a counterexample to our proposal about <CAUSE>.

Hopper and Thompson (1980) point out that there is no clear distinction between transitivity and intransitivity; the notion of transitivity comes as a continuum, ranging from high to low.

(21) Disposal constructions
      a.   Zhangsan   ba   da   shu   kan-dao le
            Zhangsan   DISP   big   tree   cut-fall PERF
            'Zhangsan cut the big tree and caused it to fall.'
      b.   *Zhangsan   ba   Yingyu   xue-fan   le.
             Zhangsan   DISP   English   study-disturbed PERF
            'Zhangsan studied English and as a result he got disturbed.'
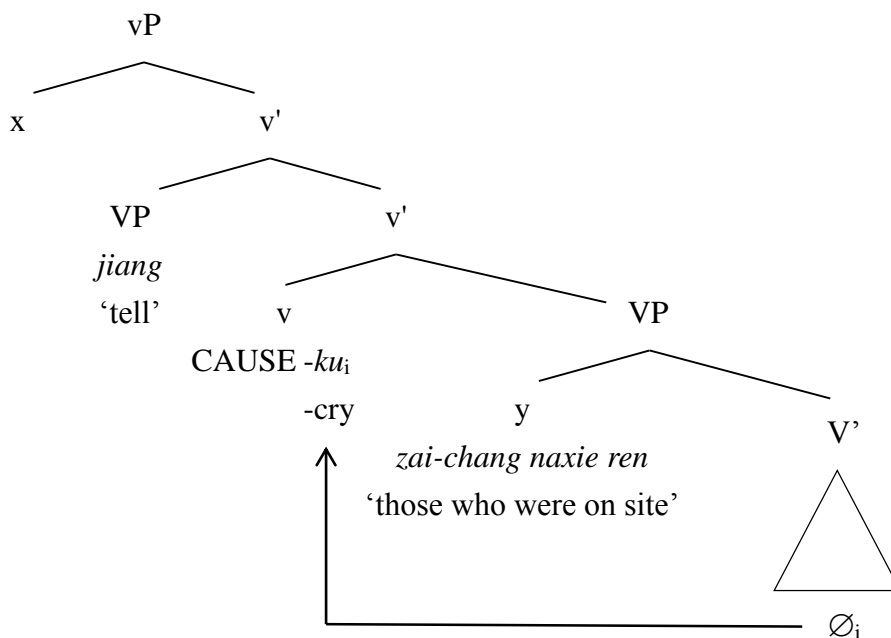(22) Passive constructions
      a.   Da   shu   bei   Zhangsan   kan-dao   le.
            big   tree   PASS   Zhangsan   cut-fall   PERF

'The big tree was cut and caused to fall by Zhangsan.'

    b.   *Yingyu   bei   Zhangsan   xue-fan   le.

          English   PASS   Zhangsan   study-disturbed   PERF

'English was studied and gotten disturbed by Zhangsan.'

4. Evidence 3: the irregularity of argument realization in Chinese

The third piece of evidence is the irregularity of argument realization with respect to the semantic restrictions of V2. Baker (1988) postulates UTAH, which claims that a direct mapping exists between the argument structure and the syntactic structure; that is, the external argument maps to the subject position, and the internal argument maps to the object position.

(23)   Lexical conceptual structure: [(x) ACT ON (y)]

                                ↓

      Argument structure: (x (y))

                              ↓

      Syntactic structure: $[NP (=x) [V_{[ACT]} NP (=y)]]$

If we adopt this hypothesis, we would expect the internal argument (y) of a verb to occur in the underlying object position. But the internal argument of an unaccusative verb in Chinese needs to meet a semantic condition: that is, when the internal argument y denotes known information, it has to move to the subject position.

(24)   a.   Kan,   si   -le   yi-ge   ren   /   *Lisi.

            look   die   -PERF one-CL person   Lisi

'Look, there is someone / *Lisi that died.'

    b.   Kan,   ?yi-ge   ren   /   Lisi   si-le.

            look   one-CL   person   Lisi   die-PERF

'Look, ?someone / Lisi died.'

With this in mind, let us examine the internal argument of the RVCs. Compare (25) and (26).

(25)   a.   *Ku   -le   <u>zai-chang</u>   de   <u>naxie</u>   <u>ren</u>.

            cry   -PERF on.site   GEN   those   person

'Those people who were on site cried.'

b.   <u>Zai-chang   de   naxie</u>   ren   ku-le.

        on.site   GEN   those   person cry-PERF

        '[Same as (25a)]'

(26)   Zhangsan   jiang   gushi,   jiang-ku -le   zai-chang   de

        Zhangsan   tell   story   tell-cry -PER   on.site   GEN

        naxie   ren.

        those   person

        'Zhangsan told the story, and as a result caused those people who were on site to cry.'

(27)

5. Evidence 4: subject identity principle in Chinese and Japanese

    A central proposal of this paper is that both Chinese and Japanese employ <CAUSE> to connect the action and the change of state in the resultative construction, but in Japanese this connection is established in lexicon, whereas in Chinese it is in syntax. In this section, we examine the selectional restrictions between V1 and V2 and illustrate the differences between Japanese and Chinese, providing support for our proposal.

    Matsumoto (1998) postulates the "subject (the prominent argument) identity principle" based on the phenomena of transitivity harmony (Kageyama 1996: 248).

(28) Subject (prominent argument) identity principle
When two verbs are compounded, the most prominent participants of the semantic structures of the two verbs must be identical.

This principle makes it possible to accurately compute the possible cases of argument identity in the nine V-V compounds, as follows.

(29) The 9 patterns of argument identity
  a. V (1 (2)) - V (x (y))   →   V-V (1=x (2=y))
  b. V (1 ( )) - V(x ( ))   →   V-V (1=x ( ))
  c. V ((2)) - V ((y))   →   V-V ((2=y))
  d. V (1( )) - V (x (y))   →   V-V (1=x (y))
  e. V (1 (2)) - V (x ( ))   →   V-V (1=x (2))
  f. V ((2)) - V (x (y))   →   V-V (2=x (y))
  g. V ((2)) - V(x ( ))   →   V-V (2=x ( ))
  h. V (1 (2)) - V ((y))   →   V-V (1=y (2))
  i. V (1 ( )) -V ((y))   →   V-V (1=y ( ))

There are two major requirements that follow from the subject identity principle. First, a prominent argument cannot be identified with a non-prominent argument. Second, when two prominent arguments are identified, the resulting argument is still a prominent argument; namely, it is the subject argument. We can thus predict the semantic relation of a V-V compound in Japanese based on these two requirements. For instance, the RVC *keri-taosu* 'kick and cause to fall' permits only one interpretation, as shown in (30).

(30) Hanako-wa   otoko-o   keri-taos-u.
      Hanako-TOP   man-ACC   kick-fall-NONPAST
  a. Hanako kicked the man, and caused the man to fall.
      (1=x (2=y))
  b. *Hanako kicked the man, and the man caused Hanako to fall.
      *(1=y (2=x))
  c. *The man kicked Hanako, and Hanako caused the man to fall.
      *(2=x (1=y))
  d. *The man kicked Hanako, and caused Hanaki to fall.
      *(2=y (1=x))

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However, to our surprise, the subject identity principle doesn't seem to apply to the RVCs in Chinese. The two major requirements mentioned above are not attested in Chinese.

(31)   Zhe-ge migong zhuan-yun   -le   henduo ren.
        This-CL maze   go.around-giddy -PERF   many   people
        'Lit. Many people went around in the maze and as a result got giddy.'

(31')   Possible interpretations of (31)
        a.   Many people went around in the maze, and as a result many people
                got giddy.
        b.   *Many people went around in the maze, and as a result the maze got
                giddy.
        c.   *The maze went around many people, and as a result many people got
                giddy.
        d.   *The maze went around many people, and as a result the maze got
                giddy.

Next we look at the case of the newly introduced argument.

(32)   Zhe-chang   da   han   gan-si -le   suoyou zhuangjia.
        this-CL   big   drought dry-die -PERF   all   crop
        'Lit. This great drought caused all the crops to dry up and die.'

(32')   Possible interpretations of (32)
        a.   The crops dried up, and the crops died.
        b.   *The drought dried up, and the drought died.
        c.   *The drought dried up, and the crops died.
        d.   *The crops dried up, and the drought died.

Here we are confronted with a question: Why can RVCs in Chinese violate the subject identity principle? Our answer to this question is that, unlike the case of Japanese, the V-V compounds in Chinese are formed in syntax. In the RVCs in Chinese, CAUSE is the head of the predicate, and V1 is just an adverbial modifier as in (27).

If we adopt Li's (1990, 1993) theory that the RVCs in Chinese are lexically formed without <CAUSE>, we will not be able to explain the facts of (31) and (32), namely that an internal argument functions as subject of the sentence in (31), and that the subject is an argument of neither V1 nor V2 in (32).

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6. Evidence 5: insertion of temporal syntactic elements

Aspectual markers are inflectional elements suffixed to verbs, indicating the temporal properties of events. If x and y are formed as a compound, regardless of compounding levels, then the aspectual markers must be suffixed to the compound as a whole, not inserted between the two verbs.

(33) a. Zhangsan ba yao [he] [jinqu] -le.
Zhangsan DISP medicine drink enter-go -PERF
'Zhangsan drank the medicine.'

b. Zhangsan ba yao [he] -le [jinqu].
Zhangsan DISP medicine drink -PERF enter-go
'[Same as (33a)]'

(34) a. Zhangsan cui-hui -le diaobao
Zhangsan wreck-destroy -PERF bunker
'Zhangsan destroyed the bunker.'

b. *Zhangsan ba diaobao cui -le -hui
Zhangsan DISP bunker wreck -PERF -destroy
'[Same as (34a)]'

Cui 'wreck' and *hui* 'destroy' constitute a V1-V2 compound, so V1-V2 can only occur in a position reserved for a verb. As a result, the perfective aspectual marker *-le* can only be suffixed to the end of the compound. What about the RVCs?

(35) a. Zhangsan ba Lisi fang-pao -le
Zhangsan DISP Lisi set.leave-leave -PERF
'Zhangsan set Lisi free and as a result Lisi ranaway.'

b. *Zhangsan ba Lisi fang -le -pao
Zhangsan DISP Lisi set.free -PERF -leave
'[Same as (35a)]'

The verbs *fang* 'set free' and *pao* 'leave' constitute an RVC. As shown in (35b), the perfective aspectual marker *-le* cannot be inserted into the two verbs. This indicates that the relationship between V1 and V2 of an RVC is very tight, which means that compounding is involved.

7. Evidence 6: Syntactic modifier on RVCs of Chinese

The 6th piece of evidence is that V1 of an RVC cannot be independently modified by a syntactic modifier. If V1 and V2 only constitute a serial verb construction without compounding, V1 should be able to receive external modification.

(36)   Zhangsan   ba   yao   da-kou-da-kou-di   [he]
        Zhangsan   DISP   medicine   in.great.drafts   drink
        [jinqu]   le.
        enter-go   PERF
        a.   Drinking in great drafts
        b.   *Entering in great drafts

(37)   *Zhangsan   renzhende   ting-xin   -le   tade   hua.
         Zhangsan   seriously   listen-believe -PERF   his   word
        'Zhangsan seriously listened and as a result believed in his words.'
        a.   Seriously listening
        b.   *Seriously believing

Along the same line, we can predict that V1 of an RVC cannot be independently modified by an adverb. Firstly look at the verbal compounds in Japanese.

(38) a. Taro-wa   kono kabin-wo   shikiri-ni   tatai-ta.
        Taro-TOP   this   vase-ACC repeatedly   hit-PAST
        'Taro hit the vase repeatedly.'
    b. *Taro-wa   kono   kabin-wo   shikiri-ni   kowashi-ta.
        Taro-TOP   this   vase-ACC   repeatedly   kowashi-PAST
        'Taro broke the vase repeatedly.'

(39) a. Taro-wa   kono kabin-wo   shikiri-ni   tatai-te   kowashi-ta.
        Taro-TOP   this   vase-ACC   repeatedly   hit-CON   break-PAST
        'Taro hit the vase repeatedly and a result he broke the vase.'
    b. *Taro-wa   kono   kabin-wo   shikiri-ni   [tataki-kowashi]   -ta.
        Taro-TOP   this   vase-ACC   repeatedly   hit-break   -PAST
        ''[Same as (39a)]''

The ungrammaticality of (39b) indicates that [*tataki-kowasu*] in Japanese is a verbal compound. RVC in Chinese is the same as Japanese.

(40)   a. Zhangsan   <u>buting-de   za</u>   zhe-ge   huaping.

            Zhangsan   repeatedly   hit   this-CL   vase

            'Zhangsan is hitting this vase repeatedly.'

        b. *Zhangsan   <u>buting-de   za-sui</u>   zhe-ge   huaping.

            Zhangsan   repeatedly   hit-break   this-CL   vase

            'Zhangsan is breaking the vases repeatedly.'

The ungrammaticality of (40b) indicates that *za-sui* is a verbal compound.

8. Conclusion

     With all the comparisons of Chinese and Japanese reported in this paper, we come to the following conclusion: the causal chain, which is built with <CAUSE> as a connection between an action and a result, definitely is constrained by the morpho-syntax of the language. Japanese, which is morphologically complex, merges the predicates <ACT>, <CAUSE>, and <BECOME> in lexicon, whereas Thai, which is morphologically simple, connects <ACT> and <BECOME> in the syntactic structure, with the effect of <CAUSE> inferred from the context. On the other hand, we believe that the northern dialect of Chinese is undergoing a change to become more agglutinating since the time of middle Chinese, so, we propose that in the syntactic structure of Chinese, there is a covert predicate <CAUSE>. The result-denoting verb V2 moves to <CAUSE>, and then the verbal complex is further compounded with V1.

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