

# Building Resultatives in Mandarin (from the result)

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## 1 Introduction

— In this talk I argue for the existence of a change of state lexical semantic operation in Mandarin that applies to (a class of) stative predicates.

— Based on an investigation of the aspectual contribution of the result predicate (here *gan* ‘dry’) in a resultative verb compound (RVC) in Mandarin such as *ca-gan* ‘wipe-dry’

- (1) Sanmao ca-gan le wanpan.  
Sanmao wipe-dry LE dishes  
Sanmao wiped the dishes dry.

— I argue that the result predicate encodes the change of state semantics available to the RVC.

— This step has consequences for certain basic questions of Mandarin grammar such as the interpretation of the aspectual particle *-le*.

— If correct, it points to the need to continue recognizing change of state as an important semantic category, as argued in von Stechow (1996), Beck (2005), and contra the proposal in Kratzer (2005) to derive state change from causation.

## Overview

- Section 2: the current proposal – an achievement semantics for the result predicate in Mandarin RVCs
- Section 3: the data and the argument
  - \* State-achievement alternations
  - \* Lack of lexical accomplishments
  - \* The potential construction and verb-coverb compounds (VCCs)
- Section 4: elements of a semantics for RVCs
- Section 5: Conclusion

## 2 The issue

### 2.1 Background

“If there is any aspect of resultatives that is completely uncontroversial, it is that they are telic: they describe events with a definite endpoint. In the Vendler classification, we would say that they are accomplishments or achievements.  
(Wechsler 2005)

- Yet resultatives presumably consist of an activity (the *means* predicate: *wipe* in (2)) and a state predicate (the *result* predicate: *dry* in (2)) (terminology from Williams (2008)).

(2) Mowgli wiped the dishes dry.

**Question:** How does the accomplishment/achievement meaning arise?

**Some approaches:**

- Lexical: aspectual shift of means predicate (Rappaport Hovav and Levin 1998) from activity to accomplishment
- Morphological: a null morpheme encoding telicity (Snyder 1995)
- Syntactic: aspectual structure encoded in syntactic event-structure decomposition (Folli and Ramchand 2005)

**A common thread:** the result predicate typically provides a result state specification (although see Kratzer (2005)).

— Similar assumptions have been made for Mandarin resultative compounds such as (1)<sup>1</sup>

- (1) Sanmao ca-gan le wanpan.  
 Sanmao wipe-dry LE dishes  
 Sanmao wiped the dishes dry.

— For instance, Fong (1997) adopts Rappaport Hovav and Levin’s (1998) template expansion proposal for a Mandarin RVCs.

— Under this analysis, the accomplishment structure of a resultative arises from an aspectual shift of the activity means predicate *wipe* (4a) to an accomplishment event structure (4b), and the result predicate specifies the result state (4c).

- (3) Mowgli wiped the dishes dry.

- (4) a.  $[x \text{ ACT} < \textit{wipe} > y] \implies$   
 b.  $[x \text{ ACT} < \textit{wipe} > y \text{ CAUSE}[\textit{BECOME} y < \textit{STATE} >]]$   
 c.  $[x \text{ ACT} < \textit{wipe} > y \text{ CAUSE}[\textit{BECOME} y < \textit{DRY} >]]$

— Although the actual aspectual categories are not made as clear, small clause-based (Hoekstra 1988) approaches to Mandarin RVCs such as Sybesma (1997, 1999), in assuming that the result predicate telicizes the means predicate, also seem to assume an accomplishment structure where the result predicate specifies a state.

## 2.2 The proposal

— I show that in RVCs such as (1), the change of state interpretation is contributed by the result predicate, which undergoes an aspectual shift from state to achievement ((5)).

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<sup>1</sup>A resultative meaning can also be encoded by so-called *-de* resultatives, where the grammatical particle *-de* is attached to the verb, and the result is encoded by a following XP (see Sybesma (1999) for discussion):

- (i) Sanmao ca-de wanpan dou faliang le  
 Sanmao wipe-DE dishes all shine LE  
 Sanmao wiped the dishes all shiny.

In this paper I shall be concerned only with verb compounds.

(5) [x STATE< *dry* >]  $\implies$  BECOME[x STATE< *dry* >]

— Indeed, as discussed in section 3, most Mandarin RVCs denote achievement, or change of state events (Chief and Koenig 2007).

— This proposal is closer in spirit to works that place a heavier burden on the result predicate in resultative structures, e.g. von Stechow (1996), Beck (2005), Kratzer (2005), although very different in other ways.

### 3 State and activity predicates in Mandarin

In this section, I show first that most stative predicates in Mandarin may alternate with change of state readings. In contrast, activity predicates do not alternate to accomplishment readings readily. In fact, lexical accomplishment predicates are known to be rare in Mandarin. This provides initial support for the plausibility of my analysis that the change of state reading in RVCs is encoded by the result predicate. I then discuss the participation of verb compounds in the POTENTIAL CONSTRUCTION, showing how it distinguishes between two ways of encoding spatial goals in verb-coverb compounds (VCVs). I argue this contrast provides strong evidence achievement status of the result predicate in RVCs.

#### 3.1 State-achievement alternations

—In general, adjective-like<sup>2</sup> stative predicates in Mandarin that describe stage-level properties (Carlson 1977) can alternate freely between state (6) and change of state (7) readings without overt morphological indication.

(6) wanpan dou hen gan.  
dishes all very dry  
The dishes are all dry.  
(State)

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<sup>2</sup>There is controversy regarding whether Mandarin does have a class of adjectives, among other issues of grammatical category (Ross 1984, 1991, McCawley 1992). What would correspond to adjectives in languages such as English has been called ‘stative verbs’ (Li and Thompson 1981) because adjective-like predication does not require the copula (see below). Sidestepping this issue I simply refer to these as stative predicates, following convention in calling RVCs VV compounds.

- (7) wanpan gang gan, ni you yao yong le  
 dishes just dry 2sg again want use LE  
 The dishes have just dried and you want to use them again.  
 (Achievement)

— The aspectual interpretations of *gan* ‘dry’ cannot be attributed to the co-occurring modifiers *hen* ‘very’, and *gang* ‘just’. The stative reading is available even without *hen*, as in (8) below.

- (8) gan wo jiu yong, bu gan wo jiu bu yong  
 dry 1sg JIU use not dry 1sg JIU not use  
 If it’s dry I will use it, if it’s not I won’t.

— The achievement reading also does not arise from *gang*, although (8) is not ambiguous – it is only stative – so this may suggest the change of state reading does require the presence of adverbial elements such as *gang*, *cai*, *yi* ... *jiu*, all indicating the recent occurrence of an event (9a-c). The change of state reading also shows up in the presence of the aspectual marker *le* (9d). (On the relationship between adverbial marking and change of state interpretations, more below (section 4.1)).

- (9) a. \*wanpan gan, ni you yao yong le  
 dishes just dry 2sg again want use LE  
 Intended: The dishes have just dried and you want to use them again.
- b. wanpan cai gan, ni you yao yong le  
 dishes just dry 2sg again want use LE  
 The dishes have just dried and you want to use them again.
- c. wanpan yi gan, ta jiu yong le  
 dishes one dry 3sg JIU use LE  
 Once the dishes dried he used it.
- d. wanpan gan-le  
 dishes dry-LE  
 The dishes dried.

— But the presence of these adverbials have no effect on individual level stative predicates, which do not alternate to change of state readings, even in the presence of these elements. In fact, individual level state predicates are not even compatible with these elements.

(10) a. ta shi yisheng.  
3sg be doctor  
(S)he is a doctor.

b.\*ta gang/cai/yi shi yisheng ...  
3sg just be doctor  
Intended: (S)he has just become a doctor, ...

— In addition, it is possible, albeit somewhat unconventional, to use predicates like *gan* ‘dry’ in isolation in an imperative. (11a) could be uttered, for instance, by the Monkey God commanding his robes to dry at once. This suggests an achievement interpretation is possible for state predicates without the presence of other grammatical items. It is conceivable that the imperative context provides a null morpheme of sorts. I remain open to the idea, and note only that a contrast still holds between property-denoting predicates and individual-level stative verbs such as *shi* ‘be’ (11b), which cannot occur in the imperative.

(11) a. gan!  
dry  
Dry!

b.\*shi yisheng!  
be doctor  
Intended: Be(come) a doctor!

— These contrasts strongly suggest that it is the stative predicate itself that alternates to a change of state reading, since non-alternating states cannot co-occur with these adverbials.

— I thus discard the idea that the adverbials are operating on the stative predicates to produce change of state readings.

### 3.2 Accomplishment verbs in Mandarin or the lack thereof

It has often been noted that accomplishment verbs are rare in Mandarin. Even the prototypical example for accomplishment verbs, *kill*, has been shown not to entail the result (Tai 2003, Chief and Koenig 2007).

(12) Sun Mazi ba Lao Luo sha-le, mei sha-si  
Sun Mazi BA NAME kill-LE not kill-die  
Sun Mazi killed Laoluo but Lao Luo didn’t die.  
Chief and Koenig (2007): attested example

— Some predicates in Mandarin do entail accomplishment situations, largely those involving certain created objects, as in (13a). But in general perfective aspect as indicated with *-le* need not entail an accomplishment situation (13b).<sup>3</sup>

(13) a#ta zuo-le yi-ge dangao keshi mei zuo-chu-lai  
3sg make-LE one-CL cake but not make-out-come  
Intended: (S)he made a cake but it didn't turn out.  
adapted from Soh and Kuo (2004: (4))

b. ta hua-le yi-fu hua keshi mei hua-wan  
3sg draw-LE one-CL picture but not draw-finish  
(S)he drew a picture but didn't finish drawing it.  
Soh and Kuo (2004: (6))

— Moreover, there seem to be no phonologically null aspectual shifts possible from stative/inchoative predicates to their causative counterparts (15c), unlike the correspondences in English (14). To obtain a causative reading, a resultative structure is needed (15d).

(14) a. The dishes are dry  
b. The dishes dried.  
c. We dried the dishes.

(15) a. wanpan dou hen gan.  
dishes all very dry  
The dishes are all dry.  
(State)

b. wanpan gan-le  
dishes dry-LE  
The dishes dried.  
(Achievement)

c.\*Sanmao gan-le wanpan  
Sanmao dry-LE dishes  
Intended: Sanmao dried the dishes.

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<sup>3</sup>Abbreviations used: CL = classifier; Q-prt = question particle

- d. Sanmao ca-gan le wanpan.  
 Sanmao wipe-dry LE dishes  
 Sanmao wiped the dishes dry.

— This lends further support to the notion that a shift to an accomplishment meaning is dispreferred in Mandarin.

— Indeed, Rappaport Hovav (2008) argues that lexical accomplishments in English are also rare, noting further that Filip and Rothstein (2006) argue for a lack of lexical accomplishments in Germanic.

### 3.3 Evidence from the potential construction

— The aspectual contribution of the result predicate can be tapped by the potential construction.

— In this structure, the negative morpheme *bu* ‘not’ or the morpheme *de* ‘(roughly) get’ is inserted between the verbs in an RVC, yielding irrealis interpretations in both cases. When *bu* ‘not’ is inserted, attainment of the result is asserted to be impossible. When *de* ‘get’ is inserted, possible attainment of the result is either questioned or asserted.

- (16) a. ni **ca-de-gan** zhe xie wanpan ma?  
 2sg wipe-GET-dry this some dishes Q  
 Can you wipe these dishes dry?

- b. wanpan tai shi, ta yixiazi **ca-bu-gan**  
 dishes too wet, 3sg a.brief.moment wipe-NOT-dry  
 The dishes are too wet, (s)he can’t wipe them dry right now.

— Below, I argue that (16a, b) are possible only because the result predicate *gan* ‘dry’ is an achievement predicate here.

#### 3.3.1 Introducing verb-coverb compounds

— To show the achievement-sensitive nature of the potential construction, a detour into another set of verb compounds is necessary. These are compounds formed with a verb and a COVERB – elements encoding largely spatial and directional meanings that show both verbal and prepositional properties (Li and Thompson 1981).

— Examples of coverbs: *dao* ‘arrive/to’, *zai* ‘(be) at’, *jin* ‘enter/into’, *chu* ‘exit/out of’, *dui*, *xiang* ‘towards’, *gen* ‘with/following’, *cong* ‘from’, among others.

— (17a, b) below provide examples of *dao* ‘arrive/to’ and *zai* ‘be at’ respectively in their main verb use. These examples show that *dao* is a goal-denoting coverb and *zai* a locational one.

- (17) a. Sanmao xingqitian dao jichang  
Sanmao Sunday arrive airport  
Sanmao arrives at the airport Sunday.
- b. Sanmao xingqitian zai jichang  
Sanmao Sunday be.at airport.  
Sanmao was at the airport on Sunday.

— In verb-coverb compounds (VCCs), the coverb retains its aspectual class.

— With a manner of motion verb such as *zou* ‘walk’ above, the VCC with the goal-encoding coverb *dao* yields a goal interpretation (18a) whereas with the locational coverb *zai* a locational reading is obtained (18b).

- (18) a. Sanmao zou-dao jie-shang.  
Sanmao walk-to street-upon.  
Sanmao walked onto the street.
- b. Sanmao zou-zai jie-shang.  
Sanmao walk-be.at street-upon.  
Sanmao walked on/\*onto the street.

— It is possible to find *zai* in VCCs with an interpretation of change of location, however, and this is when the verb itself encodes a change (Fong 1997).

— Verbs of bodily position such as *pa* ‘flop (face down)’ are ambiguous between a ‘maintain position’ and an ‘assume position’ sense (Levin and Rappaport Hovav 1995). In the ‘assume position’ sense, a VCC formed with *zai* can take on a change of location interpretation, when the change of position coincides with a change of location.

- (19) Sanmao jixu/turan pa-zai di-shang.  
Sanmao continue/suddenly flop-be.at floor-upon  
Sanmao continued to flop / suddenly flopped (down) on the floor.

— The contrast between (19) and (18b) show that although both *zai* and *dao* may be found in VCCs with resultative interpretations, where *zai* is used the result must be encoded by the verb.

### 3.3.2 The potential construction distinguishes between goal and location coverbs in VCCs

— Although *zai* and *dao* describe spatial meanings (location in the one case, goal on the other), applying the potential construction to them show an aspectually-based affinity between *dao* and other RVCs, showing a contrast with *zai* compounds.

— V-*dao* compounds are compatible with the potential construction (20), just like RVCs such as *ca-gan* (16).

(20) a. xuexiao tai yuan le, ni **zou-bu-dao** de.  
 school too far LE, 2sg walk-not-to DE  
 The school is too far, you can't get there on foot.

b. xuexiao na-me yuan, ni **zou-de-dao** ma?  
 school so far, 2sg walk-GET-to Q-prt  
 The school is so far, can you get there on foot?

(16) a. ni **ca-de-gan** zhe xie wanpan ma?  
 2sg wipe-GET-dry this some dishes Q  
 Can you wipe these dishes dry?

b. wanpan tai shi, ta yixiazi **ca-bu-gan**  
 dishes too wet, 3sg a.brief.moment wipe-NOT-dry  
 The dishes are too wet, (s)he can't wipe them dry right now.

— In contrast, V-*zai* compounds do not participate in the potential construction, as (21) below shows.

(21) Sanmao yao teng , \***pa-bu-zai** di-shang/\* **pa-de-zai** di-shang ma?  
 Sanmao lower.back pain flop-not-be.at floor-upon/kneel-POT-be.at floor-upon Q  
 Sanmao has pain in his lower back, he can't flop onto the floor/can he flop onto the floor?

— The compound *pa-zai* 'flop on(to)' may take on a change of location meaning. Yet unlike *zou-dao* 'walk to', it is unable to participate in the potential construction.

— Since both of these VCCs describe a change of location, it must be concluded that the different distribution of aspectual information in them is responsible for their different behaviour relative to the potential construction.

— This pattern is repeated for other coverbs. Those describing a change of location e.g. *jin* 'enter', *chu* 'exit' may participate in the potential construction.

- (22) a. zou bu/de jin  
 walk NOT/GET enter  
 (un)able to walk in
- b. fei bu/de chu  
 fly NOT/GET out  
 (un)able to fly out

— Coverbs that do not entail the attainment of a spatial goal, however, are incompatible with the potential structure:

- (23) a.\*zou bu/de xiang  
 walk NOT/GET towards  
 Intended: (un)able to walk towards
- b.\*fei bu/de wang  
 fly NOT/GET towards  
 Intended: (un)able to fly towards

— **Conclusion:** in RVCs such as *ca-gan*, which occur productively in the potential construction, the result predicate must describe a change of state, rather than a simple state.

## 4 Elements of RVC semantics

### 4.1 Whence the change of state interpretation?

— If the result predicate alternates from state to change of state, what is the grammatical status of this alternation? Koontz Garboden (2007) argues that change of state predicates in Tongan are derived via pragmatic coercion of state predicates in contexts very similar to the ones described here.

— Tongan state predicates in the presence of certain adverbs (those meaning ‘quickly’ and ‘slowly’) show a change of state interpretation. Koontz Garboden (2007) argues this is because a state interpretation is incompatible with the meaning of such adverbs, which should modify dynamic predicates. A change of state predication is coerced in such cases.

— This analysis could be possible for Mandarin, but I would argue that the change of state alternation in Mandarin state predicates should be attributed to a lexical operation.

— First, I showed that as an imperative, alternating state predicates such as *gan* ‘dry’ can take on an achievement interpretation in isolation (11a).

— Second, if coercion were taking place, we should expect it to take place only when necessary. Yet there are verb compounds with a resultative reading where the first verb entails a change (e.g. *bian* ‘change’), but the result predicate also indicates a change of state. (24b) indicates *da* ‘big’ in these examples has an achievement semantics.

(24) a. kongjian bian-da le  
space change-big LE  
The space got bigger.

b. zhongzhi mianji bian-bu-da  
planting area change-not-big  
The planting area doesn’t increase.

<http://www.meiti5.com/bbs/redirect.php?fid=86&tid=469&goto=nextnewset>

— *bian* ‘change’ can also combine with either change of state predicates such as *cheng* ‘become’ or stative predicates such as *wei* ‘be as’. Note that only the former is compatible with the potential construction (26c), but both describe a change, indicating that *bian* itself entails a change of state.

(25) a. wuya bian-cheng fenghuang le  
crow change-become phoenix LE  
The crow has turned into a phoenix.

b. wuya bian-wei fenghuang le  
crow change-as phoenix LE  
The crow has turned into a phoenix.

(26) a. wuya shi bian bu cheng fenghuang de  
crow be change NOT become phoenix DE  
A crow can’t turn into a phoenix.

b. wuya zenme bian de cheng fenghuang ne?  
crow how change GET become phoenix Q-prt  
How can a crow turn into a phoenix?

c. \*bian bu/de wei  
become NOT/GET as  
Intended: (un)able to become

— That state predicates such as *da* ‘big’ in combination with *bian* ‘change’ can still show up in the potential construction suggests that it is possible that the result-denoting predicate encodes a change of state even when it is not required by the context.

— This suggests the achievement semantics of the result predicate in an RVC is obtained through a lexical operation rather than through pragmatic coercion.

## 4.2 RVCs as achievements

The preceding discussion points to a change of state semantics for the result predicate in Mandarin RVCs. Other diagnostics for aspectual properties suggest that in fact, the RVC itself is an achievement and not an accomplishment (Chief and Koenig 2007, Chief 2007).

— (Some) resultatives are incompatible with progressive aspect:

- (27)\*A-gān zài dú-wán shū  
A-gan Prog study-finish book  
A-gan is finishing a/the book.

— Other result predicates incompatible with the progressive: *si* ‘dead’; *huai* ‘bad, out of order’; *po* ‘broken (of a brittle object)’ etc.

— Yet other RVCs may occur in the progressive:

- (28) Sānmáo zài cā-gān nà zhī pán-zi  
Sanmao be-at wipe-dry that CL plate  
Sanmao is wiping that plate dry.

— Other result predicates compatible with the progressive: *chang* ‘long’; *duan* ‘short’; *da* ‘big’; *xiao* ‘small’; *hao* ‘good, repaired’; *shi* ‘wet’, etc.

— As much recent work (Hay *et al.* 1999, Wechsler 2005, Beavers 2006, Beavers 2007) leads us to expect, this is because predicates such as *gan* ‘dry’ describe a gradable property associated with a non-binary scale. These are the so-called ‘degree achievements’ (Hay *et al.* 1999)

## 4.3 Towards a semantics for RVCs

— I assume that Mandarin RVCs (as well as the other compounds to be discussed below) are lexical compounds (Cheng *et al.* 1997, Williams 2008), and that Mandarin has a productive morphological process of verb compounding.

— An extensional type theoretic representation that includes a type  $e$  of individuals and a type  $s$  of events, including states. Predicates are represented in boldface.

— a predicate **Become** that creates change of state verbal predicates from stative predicates:

- (29) a. stative predicate  $P$ :  $\lambda x \lambda e_s P(x)(e_s)$   
 b. applying **Become**:  $\lambda P \lambda x \lambda e \exists e_s [\mathbf{Become}[P(x)(e_s)]](e)$

— **Become** may also be (part of) the lexically specified meaning of a verb.

— Because RVCs are generally causative (though see Her (2007)), a predicate **Cause** that relates events is needed, where **Cause**( $e'$ )( $e$ ) means  $e$  causes  $e'$  (Kratzer 2005), and the relation **Cause** corresponds to direct causation (Bittner 1999), taking into consideration the well-known complications in a definition for causation (Lewis 1973, Dowty 1979)

— Morphologically, resultative VV compounding attaches a change of state verb to an activity verb. Semantically, this involves specifying by lexical rule another event that causes the change of state (30b,c).

— Thus the RVC is an implicit causative, but is itself a change of state predicate.

- (30) a. Change of state  $g\bar{a}n$  ‘dry’:  
 $\lambda y \lambda e \exists e_s \mathbf{Become}[\mathbf{dry}(y)(e_s)](e)$   
 b. Resultative  $-gan_{res}$  ‘dry’  
 $\lambda Q \lambda y \lambda x \lambda e \exists e_s, e' [\mathbf{Become}[\mathbf{dry}(y)(e_s)](e) \wedge Q(y)(x)(e') \wedge \mathbf{Cause}(e)(e')]$   
 c.  $c\bar{a}-g\bar{a}n$  ‘wipe-dry’:  
 $\lambda y \lambda x \lambda e \exists e_s, e' [\mathbf{Become}[\mathbf{dry}(y)(e_s)](e) \wedge \mathbf{wipe}(y)(x)(e') \wedge \mathbf{Cause}(e)(e')]$

— To accommodate the effects of scalar predicates such as  $g\bar{a}n$  ‘dry’, we need to incorporate some notion of “degree” or a scale (Kennedy and McNally 1999, Hay *et al.* 1999, Pinõn 2000, Rotstein and Winter 2004, Beavers 2007).

— Those RVCs that occur felicitously in the progressive have result predicates associated with tripartite scales (Beavers 2007).

## 5 Summing Up

— In Mandarin RVCs, the result predicate is an achievement predicate.

- Adjectives/stative verbs in Mandarin (but not coverbs) alternate between state and achievement meanings.
- This alternation is obtained through a lexical operation rather than pragmatic coercion.
- Verb compounds that show similar resultative readings may still be semantically composed in different ways.
- The aspectual composition of these compounds is a better predictor of their grammatical behaviour than the grammatical category of their constituent predicates.
- A change of state operation still seems relevant, contra Kratzer’s (2005) suggestion that the BECOME operator can simply be derived from a causative structure.

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