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# Change of state verbs and result state adjectives in Mandarin Chinese<sup>1</sup>

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This paper investigates the derivational relationship between adjectives and verbs in Mandarin Chinese describing related state, change of state (COS) and caused COS meanings. Such paradigms have been observed in various languages to fall into two categories: One in which a word naming a property concept state constitutes the derivational base for the related COS verbs, and another in which a COS verb forms the basis from which the stative word – a ‘result state’ predicate – is derived. I show that in Mandarin, the distinction between morphological paradigms based on property-concept words versus eventive verbs is also found, but the actual derivational relations between verbs and adjectives are influenced by language-particular morphological properties of Mandarin. Specifically, I argue that a gradable property concept adjective systematically alternates to a related COS verb. This alternation, which can be tapped by degree modification and negation contexts, distinguishes adjectives from stative verbs, which do not have consistent COS counterparts, and from underived intransitive COS verbs, which do not have systematic stative counterparts. That is, I show that COS verbs do not lend themselves to the systematic derivation of result state adjectives. Rather, I argue that result state adjectives in Mandarin arise from conceptual-pragmatic factors: The nominal modified by such a result state adjective should be understood as describing a culturally or contextually salient class of entities.

## I. INTRODUCTION

The derivational relationship between adjectives and verbs is influenced by both conceptual and formal factors. One important conceptual factor is the

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distinction made in Dixon (1982) between property concept states and states that arise from a previous action, or ‘result states’ (Koontz-Garboden 2005). In some languages, this conceptual distinction is correlated with the morphological form taken by corresponding adjectives, which is suggestive of their derivational status. In English, for instance, a property concept state adjective such as *loose* in (1a) below can be considered the derivational base of the change of state (COS) and caused COS verbs of the form *loosen* in (1b, c) (respectively intransitive and transitive). A result state adjective such as *broken* in (2a), however, bears the past participial form of the verb *break* in (2b, c), and can reasonably be assumed to be deverbal (Haspelmath 1993, Koontz-Garboden 2005).

- (1) (a) The knot is loose.  
 (b) The knot loosened.  
 (c) Sandy loosened the knot.
- (2) (a) The window is broken.  
 (b) The window broke.  
 (c) Pat broke the window.

In this paper, I explore the derivational relationship between adjectives and verbs in Mandarin Chinese, a question complicated by an erstwhile controversy over whether an independent class of adjectives needs to be posited in the language. I argue that only one kind of regular derivational relation between these predicates is attested in Mandarin: COS verbs may be systematically derived from adjectives, but there is no correspondingly systematic derivation of result state adjectives from COS verbs. The key contrast is in the regularity of the derivation: I argue that Mandarin has both deadjectival COS verbs and deverbal result state adjectives, but only the former are systematically available, while the availability of the latter is determined by conceptual-pragmatic rather than grammatical factors.

Koontz-Garboden (2005) argues that the distinction between property concept and result states underlies the different shapes of morphological paradigms consisting of state, COS, and causative COS predicates that share the same state description. He argues that if the state description is a property concept state, the paradigm is based on the word describing the state. Alternatively, the causative verb may appear to be the basic member of the paradigm, with the intransitive and stative members derived from it. In such cases, the stative word in the paradigm would describe a result state. Relevant examples from Cuzco Quechua are given below. The state of being big, a property of one’s size, is plausibly a property concept state. Example (3) below shows that state, COS, and causative meanings with the state of being big as their stative core are based on the stative word *hatun* ‘big’, with the COS meaning arising via the transformative affix shown in (3b)

and the causative meaning arising via causative affixation to the COS form in (3c)<sup>2</sup>.

- (3) *Cuzco Quechua* (Koontz-Garboden 2005: 90, ex. (15))
- (a) wasi-qa **hatun**-mi (ka-sha-n)  
house-TOP big-EVID be-PROG-3  
'The house is big.'
- (b) **hatun-ya**-y  
big-TRANS-INF  
'become big' (Cusihuaman 1976: 195)
- (c) wasi-ta **hatun-ya-chi**-rqa-n  
house-ACC big-TRANS-CAUS-PAST-3  
'(S)he made the house big.'

Patterns analogous to (3) are also noted for O'odham and Warlpiri in Hale & Keyser (1998). Such relationships between words have long been recognized in theories of event structure where they have been captured by means of lexical operators such as *BECOME*, which indicates COS, or *CAUSE*, which is found in the representation of causative predicates (Dowty 1979, Van Valin 1993, Rappaport Hovav & Levin 1998, among others). Rappaport Hovav & Levin (1998) model these event structure generalizations with event structure templates such as those in (4), where the above-mentioned operators apply to structures made up of primitive constants that represent activities, as in (4a), and states, as in (4b).

- (4) (a) [x ACT <MANNER >] (activity)  
(b) [x <STATE >] (state)  
(c) [BECOME [x <STATE >]] (non-causative COS)  
(d) [x CAUSE [BECOME [ <y STATE > ]]] (caused COS)

In such a system, then, the event structure of the words in (3) can be represented as in (5), where *-ya* would be understood as realizing the *BECOME* operator, and *-chi* as realizing the *CAUSE* operator (see also Koontz-Garboden 2007a: 119–120, 125).

- (5) (a) *hatun* 'big':  $\lambda y \lambda s \text{big}'(y)(s)$   
(b) *hatun-ya* 'become big':  $\lambda y \lambda s \lambda e [\text{BECOME}(s)(e) \wedge \text{big}'(y)(s)]$   
(c) *hatun-ya-chi* 'cause to become big':  
 $\lambda y \lambda x \lambda s \lambda e' \lambda e [\text{CAUSE}(x, e')(e) \wedge \text{BECOME}(s)(e') \wedge \text{big}'(y)(s)]$

[2] Abbreviations used: 1, 2, 3 = first, second, third person; ACC = accusative; ASSOC = associative marker; CAUS = causative; CL = classifier; DUR = durative; EVID = evidential; INF = infinitive; NEG = negation; PAST = past tense; PART = participle; PERF = perfective; PL = plural; PROG = progressive; QPRT = question particle; REFL = reflexive; SG = singular; TOP = topic; TRANS = transformative; VPRT = post-verbal particle. Where examples from other sources are cited, I have modified the glosses to conform to a single format for consistency in labelling.

In these and later representations, I assume an extensional semantics with a domain of ordinary individuals (type *e*), represented with variables such as *x*, *y*; a type of events (type *v*, variables *e*, *e'*); states (type *s*, variables *s*, *s'*) and times (type *i*, variables *t*, *t'*). (5a) gives the semantic representation for stative *hatun* ‘big’. The COS *hatun-ya* ‘become big’ in (5b) combines with an individual *x* and a state *s*, to yield the set of events in which *x* comes to be in the state *s* of being big(ger).<sup>3</sup> The causative *hatun-ya-chi* ‘cause to become big’ in (5c) would be used to describe those events where some participant causes a COS event in which another participant comes into a state of being big(ger).

With other predicates, however, derivational relations may go in the other direction. As (6) shows, the causative verb *qhasu* ‘tear’ (6a) is morphologically simple, and the related COS and stative words seem to be derived from it. The COS meaning is expressed via reflexive affixation (6b), and the stative predicate shows the past participle form of the transitive verb (6c).

(6) *Cuzco Quechua* (Koontz-Garboden 2005: 91, ex. (16))

- (a) Tela-ta **qhasu**-sha-n  
 cloth-ACC tear-PROG-3  
 ‘(S)he tore the shirt./ (S)he is tearing the cloth.’
- (b) Tela **qhasu**-ku-n  
 cloth tear-REFL-3  
 ‘The cloth got/became torn.’
- (c) Tela **qhasu**-sqa ka-sha-n  
 cloth tear-PAST.PART be-PROG-3  
 ‘The cloth is torn.’

If the causative verb is indeed the basic member of the paradigm, this might suggest that the semantic representations of the intransitive COS and stative members are built on its representation. Such an assumption underlies the PRINCIPLE OF MONOTONICITY in the construction of word meaning postulated in Rappaport Hovav & Levin (1998) and Koontz-Garboden (2005, 2007a,b). The formulation in Koontz-Garboden (2007a 121, ex. (11)) is as follows:

(7) *The Principle of Monotonic Composition (PMC)*

Word meaning is constructed monotonically on the basis of event structure constants and operators.

The PMC constrains word meanings to be built up by adding pieces of meaning – event structure constants and operators – to some event structure representation, but not by deleting pieces of meaning. Under the PMC, then, it would be legitimate to derive say, (5b) from (5a) by adding the BECOME operator, but not vice versa, by removing BECOME from (5b) to derive (5a).

[3] I set aside issues of interpretation arising from the nature of the scale associated with a predicate.

Adopting the PMC, this would mean for the paradigm in (6) that the event structure representations of the COS and stative members include the meaning of the causative member. This is indeed what Koontz-Garboden (2007b) argues for intransitive COS verbs that appear to be derived from the causative version, such as anticausativized verbs in Spanish. He proposes that the COS verb arises from binding the agent argument of the causative verb. Following this proposal, the meaning of the COS verb in (6b) would be built on the meaning representation of the causative verb in (8a), resulting roughly in (8b): a relation between individuals, states, and COS events, where the individual undergoes a change of state caused by an implicit agent. Similarly, the meaning of the stative member would be built on that of the causative verb, and would be more or less as in (8c): a set of individuals related to a set of states arising from an implicit COS event (Kratzer 2000, Koontz-Garboden 2012) caused by an agent, also implicit.

- (8) (a) *qhasu* ‘tear’:  $\lambda y \lambda x \lambda s \lambda e' \lambda e$  [torn'(y)(s)  $\wedge$  BECOME(s)(e')  $\wedge$  CAUSE(x, e')(e)]  
 (b) *qhasu-ku* ‘become torn’:  $\lambda y \lambda s \lambda e' \exists e \exists x$  [torn'(y)(s)  $\wedge$  BECOME(s)(e')  $\wedge$  CAUSE(x, e')(e)]  
 (c) *qhasu-sqa* ‘torn’:  $\lambda y \lambda s \exists e \exists e' \exists x$  [torn'(y)(s)  $\wedge$  BECOME(s)(e')  $\wedge$  CAUSE(x, e')(e)]

It is not the goal of this paper to argue specifically for these representations, but they are intended to make explicit the meanings I have in mind for the deadjectival verbs and deverbal adjectives in the following discussion. The crucial point here is that it is possible to identify two kinds of paradigms with related state/COS/caused COS words. Besides English and Cuzco Quechua, Koontz-Garboden (2005) illustrates this point with data from Tongan and Eastern Armenian (Megerdoomian 2002),<sup>4</sup> and notes that this generalization also applies in other languages, such as Central Alaskan Yup'ik (Jacobson 1984, 1985), Cora (Vázquez Soto 2001), Maori (Bauer 1993) and Spanish.

Koontz-Garboden's (2005) discussion is framed around the stative word of the paradigm, in terms of whether it is basic or derived. At the heart of the distinction between basic and derived stative words, however, is really which member of these paradigms is basic. In one case, it is the stative word, describing a property concept. Categorially, this word could be an adjective (e.g. English, also Eastern Armenian (Megerdoomian 2002)), a verb (e.g. Tongan (Koontz-Garboden 2005, 2007a)), or a noun (e.g. Warlpiri (Hale & Keyser 1998)), in keeping with the controversial status of adjectives as a universal category (Dixon 1982, Wetzer 1992, 1996). In the other case, it is a COS verb,

[4] As Koontz-Garboden (2005) notes, in Megerdoomian (2002), Eastern Armenian is shown to lack basic adjectives that express a result state, but it is not clear how a result state adjective is encoded. Megerdoomian's discussion suggests that it is derived from the transitive verb (page 191).

apparently the causative member. This would be the case where the stative member of the paradigm constitutes a result state predicate. The respective derivational relations would thus be as schematically represented in (9).

- (9) *Words expressing related state, COS, caused COS: Two kinds of morphological paradigms (in English, Cuzco Quechua, etc.)*

	State	COS	Caused COS
	Adj/Verb/Noun	Verb	Verb
Property concept state-based	—	—	— →
(Caused) COS-based	←	—	—

The picture in (9) is of course an abstraction, and there is variation in how individual languages reflect the relevant derivational relationships, hence the use of dashed arrow lines. The Cuzco Quechua data show a good fit with (9), while for English COS verbs such as *break*, which may be either intransitive or transitive, it is not clear which form should be considered basic, suggesting that result state words could be formed on the basis of intransitive COS verbs. Koontz Garboden (2005: 93) shows that in Tongan, the same form expresses state and intransitive COS meanings. Where a property concept state is involved, this form may take a prefix *faka-*, expressing the associated caused COS. Where a result state is involved, the causative member is morphologically basic, with the prefix *ma-* occurring on the intransitive COS and stative forms.

These observations raise certain questions. First, what is the role of intransitive COS verbs in such paradigms? The Cuzco Quechua data seem to suggest that intransitive COS verbs are either derived from a stative or a causative predicate, as analogous paradigms in Eastern Armenian (Megerdooonian 2002: 187) suggest. In English, the situation is not clear. Are there, then, cases where the intransitive COS verb is clearly basic to such a paradigm? Second, the generalizations in (9) are based on languages with at least some kind of overt morphological marking that hints at the direction of derivation. Could the same paradigms be identified in a language where no such cues are available? Below, I show that these are precisely the issues brought into focus when we consider analogous sets of words expressing related state and COS meanings in Mandarin.

The Mandarin examples in (10), where the predicates can be assumed to share a property concept state meaning, show no overt morphology distinguishing related stative words, as in (10a),<sup>5</sup> and intransitive COS words,

[5] As noted in Section 2.2, *hěn* ‘very’ need not contribute an interpretation of intensification, hence the parentheses around *very* in the translation of (10a) and other examples below of a similar nature.

as in (10b): The same form seems to express both kinds of meanings.<sup>6</sup> On the other hand, this form is unable to express the related caused COS meaning such as in (10c).<sup>7</sup> Rather, a caused COS predicate related to a stative predicate is encoded by resultative verb compounds (RVCs) such as (10d).<sup>8</sup>

- (10) (a) mǎlù hěn kuān  
road very wide  
'The road is (very) wide.' (State)
- (b) mǎlù kuān-le  
road wide-PERF  
'The road widened.' (COS)
- (c) \*shì zhèngfǔ kuān-le mǎlù  
city government wide-PERF road  
Intended: 'The city government widened the road.' (Caused COS)
- (d) shì zhèngfǔ jiā-kuān-le mǎlù  
city government add-wide-PERF road  
'The city government widened the road.' (Caused COS)

An overlapping but distinct set of behaviours is shown by predicates such as *liè* 'crack' in (11a), which I propose in Section 4.1.1 below to be a COS verb. Just as with *kuān* 'wide/widen' above, *liè* 'crack' cannot be causative, as is seen in (11b). The causative meaning is again expressed by an RVC,

[6] As I discuss below in Section 3, the COS reading of (10b) should not be attributed to the perfective marker *-le*.

[7] A causative alternation is available for a variety of resultative sentences (see e.g. Huang 1988: 293–300; Cheng & Huang 1994). These may involve resultative compounds, as in (i)–(ii), or periphrastic resultatives (iii)–(iv). Without a result expression, however, a predicate such as *zuì* 'intoxicated' or for that matter *liè* 'crack' in (11) cannot be causative.

- (i) Sānmáo zuì-dǎo-le  
Sanmao intoxicated-collapse-PERF  
'Sanmao got so drunk he collapsed.'
- (ii) nà píng jiǔ zuì-dǎo-le Sānmáo  
that bottle wine intoxicated-collapse-PERF Sanmao  
'That bottle of wine got Sanmao so drunk that he collapsed.'
- (iii) Sānmáo zuì-de zhàn-bù-qǐlái  
Sanmao intoxicated-VPRT stand-NEG-rise  
'Sanmao was so drunk he could not stand up.'
- (iv) nà píng jiǔ zuì-de Sānmáo zhàn-bù-qǐlái  
that bottle wine intoxicated-VPRT Sanmao stand-NEG-rise  
'That bottle of wine got Sanmao so drunk that he could not stand up.'

[8] There are, of course, monomorphemic transitive and agentive verbs in Mandarin. Some can be said to describe a caused change of state, but one in which the end state is not entailed to reach a particular threshold (Chief 2007, Koenig & Chief 2008) (see footnote 39 below).

see (11c).<sup>9</sup> Unlike *kuān* ‘wide/widen’, however, *liè* ‘crack’ simply does not allow a stative interpretation, see (11d).

- (11) (a) *jìngzi liè-le*  
 mirror crack-PERF  
 ‘The mirror cracked.’ (COS)
- (b) \**Sānmáo liè-le jìngzi*  
 Sanmao crack-PERF mirror  
 Intended: ‘Sanmao cracked the mirror.’ (Caused COS)
- (c) *Sānmáo pèng-liè-le jìngzi*  
 Sanmao collide-crack-PERF mirror  
 ‘Sanmao cracked the mirror by knocking into it.’ (Caused COS)
- (d) \**jìngzi (hěn) liè*  
 mirror very cracked  
 Intended: ‘The mirror is (badly) cracked.’ (State)

The examples in (11) suggest that verbs such as *liè* ‘crack’ are not derived from stative predicates, but the forms of the intransitive predicates in (10) above do not indicate how the homophonous state and COS words are related. This last issue is in turn related to the question of whether a class of adjectives should be recognized in Mandarin (Tai 1982, McCawley 1992), i.e. whether predicates such as *kuān* ‘wide’, which show both stative and COS interpretations, should be considered adjectives or verbs. That is, the picture presented by Mandarin thus far in terms of how related state, COS, and caused COS meanings are encoded appears like that in (12).

(12) *The encoding of state, COS, and caused COS predicates in Mandarin*

	State	COS	Caused COS
Property concept state-based	Adj?	Adj?	Resultative
	Verb?	Verb?	Verb
(Caused) COS-based	*?	Verb	Compound

[9] Some verbs do show both COS and causative uses, e.g. *huà* ‘melt’ (Gu 1992), compare (i) to (25a) below:

- (i) *tāmen huà-le yí kuài bīng*  
 3PL melt-PERF one piece ice  
 ‘They melted a piece of ice.’ (Gu 1992: 99, ex. (18d))

This alternation is not systematically available for all intransitive COS verbs, as the case of *liè* ‘crack’ in (11b) above demonstrates. The other COS verbs discussed below, such as *pò* ‘break’ and *huài* ‘break down’ discussed in Section 4.1.3 below, *bīng* ‘sick’ in (26a), and *sui* ‘shatter’ in (48b) also have no causative uses. The factors that determine whether the same monomorphemic verb may show both causative and intransitive COS uses are beyond the scope of this paper. Given the non-systematic nature of the alternation, I set the issue aside and do not include it in the following discussion. Besides *huà* ‘melt’, other COS verbs that show a causative use include *dòng* ‘freeze’ and possibly *chén* ‘sink’.

How is the picture in (12) related to that in (9)? In this paper, I argue that the distinction found in other languages between related state and COS morphological paradigms based on a property concept state word, or on a COS verb, also applies in Mandarin, showing how the surface manifestation of the distinction is influenced by language-particular properties. First, the overall picture differs from the languages discussed above in that the causative member of the paradigm is expressed by an RVC. I take this point for granted and will not discuss it in what follows. I show, however, that the two paradigms may be distinguished on the basis of their intransitive members.

Specifically, I argue that property concept states in Mandarin are expressed by adjectives, and Mandarin allows a systematic derivation of intransitive COS verbs from property concept adjectives. In addition, Mandarin also has a set of basic intransitive COS verbs. Unlike the languages discussed above, however, I argue that there is no way to systematically derive result state adjectives from COS verbs, including RVCs. This is not to say that Mandarin has no result state adjectives. I show that these do exist, but rather than being systematically derived, their availability depends on conceptual-pragmatic factors. My proposal is schematized in (13).

(13) *No systematically derived result state adjectives (Mandarin)*

	State Adj	COS Verb	Caused COS RVC
Property concept state-based	—————→ (← — — — —→)		
(Caused) COS-based	← — — — — / — — — —		

The dashed arrow line in the last row represents a potential regular derivation of result state adjectives from COS and caused COS verbs. The forward slash signifies the lack of such a regular derivation. To the extent that compounding can be considered a derivation, RVCs may be said to be formed on the basis of either stative or COS verbs. Since this issue is not discussed below, I represent the possible relationship with a parenthesized dashed arrow line in the second row of the table.

I begin the inquiry in the next section by addressing the verb/adjective controversy in Mandarin, where I provide preliminary evidence for distinguishing adjectives from stative verbs. In Section 3, I show that gradable adjectives have systematic verbal COS counterparts, and this distinguishes adjectives both from stative verbs, which do not consistently allow COS interpretations, and from basic COS verbs, which have no immediately observable stative counterparts. In Section 4, I reinforce this last point further, showing that COS verbs do not have regular result state adjective counterparts. This is not due to a categorical prohibition against deverbal adjectives in Mandarin, however. I demonstrate that deverbal result state adjectives are

available, just not systematically so. I propose that conceptual-pragmatic factors are at work in determining the kinds of deverbal adjectives available. Section 5 concludes the paper.

## 2. DIAGNOSING ADJECTIVES IN MANDARIN

Whether an independent category ‘adjective’ in Mandarin should be recognized as distinct from verbs – that is, whether there are morphosyntactic criteria (apart from valence) to distinguish a class of intransitive, stative predicates of which property concept words are presumably the core members – has been an issue of some controversy, with some arguing against this position (Tai 1982, McCawley 1992), and some for (Paul 2005, 2010; Huang, Li & Li 2009: 21–26). In the Chinese linguistics tradition, *xíngróngcí* ‘descriptive words’ are treated as a subclass of verbs (Chao 1968; Zhu 1956/1980, 1982; Li & Thompson 1981: 142). In works not directly dealing with the topic, decisions about lexical category have often been made without empirical motivation. In this section, I provide some background to the verb/adjective controversy in Mandarin, showing how the morphosyntactic properties of verbs and putative adjectives overlap. I then discuss recent research that provides initial evidence for distinguishing adjectives from verbs.

### 2.1 *Similarities between verbs and adjectives*

Three major points, well-documented in the literature, obscure the verb/adjective distinction. The first concerns the similarity between adjectives and stative verbs: Both purported adjectives and stative verbs allow modification by intensifying adverbials. For putative adjectives such as *gāo* ‘tall/high’ in (14a), being able to combine with intensifiers such as *hěn* ‘very’ is unsurprising. But this property cannot distinguish these predicates from stative verbs such as *xǐhuān* ‘like’ in (14b), which can also be modified with these adverbials (McCawley 1992). (Since *xǐhuān* ‘like’ can take an object, it may safely be assumed to be a verb (Zhu 1982: 55, 58).)

- (14) (a) Sānmáo hěn gāo  
 Sanmao very tall  
 ‘Sanmao is (very) tall.’  
 (b) Sānmáo hěn xǐhuān māo  
 Sanmao very like cat  
 ‘Sanmao likes cats (very much).’

Second, Mandarin adjectives often show some degree of unpredictability in nominal modification contexts when the associative marker *de* is absent.<sup>10</sup>

[10] The marker *de* occurs between a head nominal and a preceding modifier phrase. The modifying phrase may be of various kinds, e.g. possessive, adjectival, or a relative clause.

For instance, the putative adjective *bái* ‘white’ may felicitously modify the noun *zhǐ* ‘paper’ with or without the particle *de*, as in (15a), but with a different noun, such as *shǒu* ‘hand’, *de* seems to be required, as is seen in (15b):

- (15) (a) *bái* (de) *zhǐ*  
 white ASSOC paper  
 ‘white paper’ (Zhu 1980: 7)
- (b) *bái* #(de) *shǒu*  
 white ASSOC hand  
 ‘white hand’ (Zhu 1980: 10)

This has led some to conclude that putative Adj–Noun sequences are instances of word formation (potentially with verbs), rather than phrasal modification (McCawley 1992: 233–235; Duanmu 1998: 157), with the presence of *de* being treated, for instance, as indicating a relative clause (Sproat & Shih 1991).

Third, as familiar from above, many putative adjectives, e.g. *gāo* ‘tall/high’ in (16a), also show verb-like behaviour. In particular, they allow a COS interpretation, most notably in the presence of the perfective marker *-le*, as in (16b).

- (16) (a) *bìng-ren* *xuè-yā* *hěn gāo*  
 sick-person blood-pressure very high  
 ‘The patient’s blood pressure is (very) high.’
- (b) *bìng-ren* *xuè-yā* *gāo-le*  
 sick-person blood-pressure high-PERF  
 ‘The patient’s blood pressure has risen.’

These are the reasons why adjectives have been considered a subclass of verbs in Mandarin. Below, I review recent work highlighting the differences between adjectives and verbs.

## 2.2 *The presence of degree modification*

The examples in (14) above show that both putative adjectives and stative verbs may occur with degree modifiers such as *hěn* ‘very’. They contrast, however, in the absence of degree modification.

As is well known, the presence of *hěn* ‘very’ in (14a) above need not have an intensifying effect, but may simply provide a positive interpretation for the adjective (Li & Thompson 1981: 143–144; Huang 2006; Gu 2008; Liu 2010; Grano 2012). In the absence of degree modification, putative adjectives take

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Li & Thompson (1981: 113) call this modifying phrase, with *de* included, the ‘associative phrase’. I adopt their terminology, and call *de* an ‘associative marker’. This use is merely for convenience, and no theoretical significance should be attached to the label. See also footnotes 11 and 15.

on a comparative interpretation, as in (17a) (Zhu 1956/1980, Sybesma 1997), but stative verbs do not, see (17b), as is also the case in Cantonese (Francis & Matthews 2005).

- (17) (a) Sānmáo gāo  
 Sanmao tall  
 ‘Sanmao is taller.’ Not: ‘Sanmao is tall.’  
 (b) Sānmáo xǐhuān māo  
 Sanmao like cat  
 ‘Sanmao likes cats.’ Not: ‘Sanmao likes cats more.’

This points to some kind of contrast between the two classes (although Francis & Matthews 2005 do not argue for a class of adjectives in Cantonese distinct from verbs).

Researchers have been careful to note that the comparative reading for putative adjectives without degree modification, as in (17a) above, does not arise in all contexts. In certain contexts, such as embedding, negation, or where two adjectival predication sentences are juxtaposed, the ‘positive’ reading is available without degree modification (Zhu 1956/1980: 26). Several recent works have dealt in detail with identifying the kinds of contexts that license the positive interpretation of an unmodified degree adjective (Huang 2006, Gu 2008, Liu 2010, Grano 2012). Nonetheless, it remains true that stative verbs such as *xǐhuān* ‘like’ do not show this restriction, and the observation is still relevant to distinguishing adjectives and verbs as separate word classes.

### 2.3 Non-predicative adjectives

Turning to nominal modification, Paul (2005, 2010) argues that not all putative Adj–Noun sequences unmediated by *de* are compounds, and also, not all putative Adj–*de*–Noun sequences should be considered relative clause modification. Citing work by Lü & Rao (1981), Paul (2005: 759) notes first that there is in Mandarin ‘a large class of so-called “nonpredicative” adjectives which cannot function as predicates on their own but only as modifiers’, as shown in (18a). In predicate position, these adjectives require the copula *shì* and the particle *de*, as shown in (18b), but *shì ... de* cannot occur in a modification structure, see (18c).<sup>11</sup> (For further discussion of *shì ... de*, see Section 4.2 below.)

- (18) (a) yí gè fāng (de) pánzi  
 one CL square ASSOC plate  
 ‘a square plate’ (Paul 2005: 760, ex. (6))

[11] The particle *de* in the *shì ... de* construction is written in Chinese with the same character as the ‘associative marker’ (see footnote 10 above), but I gloss the former as DE and the latter as ASSOC to distinguish the *shì ... de* and nominal contexts.

- (b) zhèi gè pánzi \*(shì) fāng \*(de)  
 this CL plate be square DE  
 ‘This plate is square.’
- (c) wǒ mǎi-le yí gè (\*shì) fāng (de) pánzi  
 I SG buy-PERF one CL be square ASSOC plate  
 ‘I bought a square plate.’ (Paul 2005: 760, ex. (4a, b))

If all prenominal modifiers with *de* constitute relative clauses, we would expect *shì fāng-de* ‘square’ (lit. ‘be square-DE’) to occur prenominally, rather than simply *fāng* or *fāng-de*, as in (18a). Yet the facts are opposite to this prediction. Since words such as *fāng* ‘square’ cannot be predicative in isolation, it is hard to conclude that they constitute relative clauses in modifier position, with or without *de*. It is possible to assume that *fāng pánzi* ‘square plate’, without *de*, is a V–N compound, but this assumption again seems suspect since *fāng pánzi* ‘square plate’ is semantically transparent, and *de* may be added with no change in meaning, as (18a) shows (as opposed to *bìng* ‘sick’ + N, see Section 4.1.3 below). The most appropriate conclusion seems to be that not all prenominal modification with *de* is indicative of a relative clause.<sup>12</sup>

Paul (2005) then demonstrates a contrast between lexical and phrasal instances of prenominal adjectives. In phrasal modification structures, the head noun is accessible to phrase structure operations, whereas in cases of lexical compounding, it is not, in accordance with the lexical integrity hypothesis (Huang 1984). Paul argues that in sentences like (19a), the head noun *méiguì* ‘rose’ modified by *huáng* ‘yellow’ is visible to rules at the phrasal level.

- (19) (a) Āměi bù xǐhuān huáng méiguì, hóng de hái kěyǐ.  
 Amei NEG like yellow rose red ASSOC still acceptable  
 ‘Amei doesn’t like yellow roses, red ones are still OK.’  
 (Paul 2005: 763, ex. (19))
- (b) \*Āměi bù xiǎng chī hóng-huā, huáng  
 Amei NEG want eat red-flower [= safflower] yellow  
 (de) hái kěyǐ.  
 ASSOC still acceptable  
 Intended: ‘Amei doesn’t want to take safflower, yellow ones are still OK.’  
 (Paul 2005: 762, ex. (21))

[12] A *JL* referee suggests that (18c) could be unacceptable because of a general prohibition against relativizing *shì ... de*, but this is not likely to be the case. While relativized *shì ... de* clauses are indeed rare, they do exist:

- (i) shì yìshēng de dōu zhīdao tā  
 be doctor DE all know 3SG  
 ‘Anyone who is a doctor knows about him/her.’
- (ii) bújiǎnde shì dà de jiù yíding hǎo  
 NEG.obvious be big DE JIU definitely good  
 ‘It’s not obvious that what’s big is always good.’

This allows an identity relation to be construable with the head noun in a following NP, licensing that empty head. In (19b), *hóng-huā* ‘safflower’ (lit. ‘red flower’) is a compound.<sup>13</sup> Its head noun is not visible to phrasal operations, thus it cannot participate in an identity relation with the head of a following NP, which in turn cannot be empty.

These arguments show that it is possible, and indeed useful, to distinguish a class of adjectives in Mandarin. I will take the ability of a word to productively modify a nominal in a semantically transparent way with the optional presence of *de* as indicative of adjective status. That is, I assume that an Adj–Noun sequence could be a compound, but may also be a phrasal configuration, as Paul suggests. This means that at least the following phrase structure configurations are available in Mandarin noun phrases:

- (20) (a) N' → (A) {N|N'}  
 (b) NP → (AssocP) N'  
 (c) AssocP → XP *de*

The rule in (20a) allows structures such as those in (21), and rules out those in (22).

- (21) (a) yì zhī [N' dà [N' hēi gǒu]]  
 one CL big black dog  
 ‘a big black dog’  
 (b) yì zhī [NP [AssocP dà **de**] [N' hēi gǒu]]  
 one CL big ASSOC black dog  
 ‘a big black dog’
- (22) (a) \*yì zhī dà [NP [AssocP hēi **de**] gǒu]  
 one CL big black ASSOC dog  
 ‘a big black dog’  
 (b) \*yì zhī [AdjP hěn dà] [N' (hēi) gǒu]  
 one CL very big black dog  
 ‘a very big (black) dog’

According to (20b), the presence of *de* between modifier and head noun in (21b) indicates a maximal NP. In the same way, *hēi-de gǒu* ‘black-ASSOC dog’ in (22a) also constitutes a maximal NP. The adjective *dà* ‘big’ is thus disallowed because adjectives cannot directly modify a maximal NP. The rule in (20a) also means that only lexical adjectives can directly modify nominals, but modifier phrases, including adjective phrases, must be mediated by *de*, as according to (20b, c), hence (22b), where the prenominal modifier is an AdjP, is ungrammatical, and requires *de* to occur between *hěn dà* and *(hēi) gǒu*.

[13] Safflower is used in traditional Chinese medicine.

Accordingly, *gāo* ‘tall/high’, discussed above, may occur prenominally without *de*, as in (23), but stative verbs such as *xǐhuān* ‘like’ may not, see (24) (see also Hopper & Thompson 1984: 729).

- (23) *gāo* (de) *jiàgé*  
 high ASSOC price  
 ‘a high price’
- (24) (a) (*qīngshàonián*) *xǐhuān* \*(de) *diànyǐng*  
 youth like ASSOC movie  
 ‘a movie liked (by young people)’
- (b) *xǐhuān* (*diànyǐng*) \*(de) *qīngshàonián*  
 like movie ASSOC youth  
 ‘young people who like (movies)’

Without *de*, (24a) could only be interpreted as a clause, meaning ‘young people like movies’, and (24b) would be disallowed altogether.

To recapitulate briefly, adjectives in Mandarin can be diagnosed preliminarily in the following ways. First, if a word that describes a gradable property must occur with some kind of degree modifier in a declarative main clause for a positive degree interpretation, and without the degree modifier, the clause takes on a comparative interpretation, the word is an adjective. Secondly, adjectives but not verbs can productively modify nouns at a phrasal level with the particle *de* optionally present, with a transparent, compositional interpretation. That is, whether or not *de* is present should not affect the interpretation of the noun phrase.

The ability of putative adjectives such as *gāo* ‘tall/high’ to take on COS interpretations (as in (16b) above) remains unresolved, however. It is possible, for instance, that Paul’s arguments are correct in that non-predicative words such as *fāng* ‘square’ are adjectives, but that words such as *gāo* ‘tall/high’, which show both predicative and modifier uses, are verbs. In the next section, I address this issue, showing how the adjectival status of *gāo* ‘tall/high’ can be reconciled with its COS interpretation, and how the verb/adjective distinction finds correlating distinctions in the event structural properties of predicates.

### 3. DEADJECTIVAL VERBS: COS INTERPRETATIONS OF GRADABLE ADJECTIVES

This section distinguishes adjectives from verbs by probing their alternative stative and COS interpretations. I argue that the COS interpretations of putative adjectives arise from COS verbs that are systematically derived from the adjectives.

#### 3.1 *The problem of COS interpretations*

Across languages, the class of adjectives encodes states. If the word *gāo* ‘tall/high’ in (16a) is an adjective, then how does the COS meaning in (16b) arise?

- (16) (a) bǐng-ren xuè-yā hěn gāo  
 sick-person blood-pressure very high  
 ‘The patient’s blood pressure is (very) high.’  
 (b) bǐng-ren xuè-yā gāo-le  
 sick-person blood-pressure high-PERF  
 ‘The patient’s blood pressure has risen.’

The obvious response would be to attribute the COS meaning to the perfective marker *-le*. In this section, however, I argue that the change of state meaning arises from the predicate itself: In (16b) *gāo* ‘tall/high’ is a COS verb. That is, the form *gāo* ‘tall/high’ could correspond either to (i) a gradable adjective, or (ii) a COS verb, which I assume is derived from the adjective. I argue for this position by comparing these alternating predicates with a group of verbs that I show to be basically COS, a class whose categorization has so far not received consensus, and whose significance has yet to be sufficiently recognized.

In the debate over whether or not to recognize a class of adjectives in Mandarin, another related distinction in the language has been obscured, namely the contrast between basically stative and basically COS predicates. The difficulty of distinguishing verbs and adjectives means that assumptions about the lexical category of predicates relevant to the issue are often made without argument. These assumptions might not have strong consequences for a certain work, and indeed, are often correct (based on the criteria I argue for below), but this lack of empirical criteria has given rise to conflicting assumptions about various predicates among researchers.

This is reflected in some classification inconsistencies present in the literature. For instance, while both sentences in (25) show an intransitive predicate occurring with *-le* (as does (16b) above), Li & Thompson (1981) treat each predicate differently. They assume *huà* ‘melt’ in (25a) to be ‘an adjective with an end point as part of its meaning’ (page 251), but take *sǐ* ‘die’ to be a change of state verb (page 195).

- (25) (a) bīng dōu huà-le  
 ice all melt-PERF  
 ‘The ice has all melted.’ (Li & Thompson 1981: 251, ex. (44))  
 (b) tā qù-nián sǐ-le  
 3SG last-year die-PERF  
 ‘(S)he died last year.’ (Li & Thompson 1981: 195, ex. (37))

It does not seem controversial that dying, which involves a change of state, should be described by a COS verb. Yet as much as dying, melting also involves a change of state (hence an endpoint). If *huà* ‘melt’ is assumed to be an adjective, this would imply that it is stative at some level. Its COS interpretation in (25a) would then be a derived one. It is not clear,

however, what empirical criteria enter into this distinction. Similar questions arise with the position in Ross (2002: 348–351) that *bìng* ‘sick’ (see (26a)) corresponds to a state, whereas *sǐ* ‘die’ (see (25b) above) describes a change of state.<sup>14</sup>

Deadjectival COS verbs and basic COS verbs are similarly indistinguishable. The example in (16b) above shares the same predicate-*le* form as the examples in (25) above and (26) below. However, I argue below that the predicates in (25) and (26) are basically COS verbs, whereas the predicate in (16b) is a deadjectival verb.

- (26) (a) tā bìng-le  
           3SG sick-perf  
           ‘(S)he got sick.’  
       (b) huǒ miè-le  
           fire extinguish-PERF  
           ‘The fire went out.’

The predicates in (16), (25) and (26) may all occur in sentences that encode a change of state. The sentences in (27)–(28) contain an *in X amount of time* adverbial, suggesting that they contain telic predicates.

- (27) (dǎ-le zhēn hòu,) bìng-ren xuè-yā liǎng xiǎoshí  
       hit-PERF needle after sick-person blood-pressure two hours  
       (nèi) jiù gāo-le  
       within JIU high-PERF  
       ‘(After getting the injection,) the patient’s blood pressure rose in two hours.’  
       (28) (lín yǔ hòu,) tā liǎng tiān (nèi) jiù bìng-le  
           wetted rain after 3SG two day within JIU sick-PERF  
           ‘(After getting wet in the rain,) (s)he got sick in two days.’

Attributing the telicity of such examples to the presence of *-le*, Smith (1997) notes that sentences such as (26a) encode COS, but treats the verb itself as stative, taking the COS interpretation to be a ‘shifted’ one (page 265). It is not clear from the discussion whether it is the event structure category of the verb or the entire sentence that has shifted. I argue below that in all of the cases in (16b), (25), and (26) the COS interpretation should be attributed to the predicate rather than to *-le*. The difference between them is that (16b) contains a deadjectival COS verb, while (25) and (26) contain verbs that are basically COS.

[14] Ross (2002: 348, ex. (11)) does provide motivation for her choice, with an example showing *bìng* ‘sick’ modified by *hěn* ‘very’. This is ungrammatical for me and other Mandarin native speakers I have consulted, but suggests that there may be speaker variation as to the category of *bìng* ‘sick’.

3.2 *Distinguishing adjectives and basic COS verbs*

This section argues that putative adjectives systematically have COS verb counterparts. That is, the COS interpretations shown by adjectives arise from a COS verb that has the same form as the adjective. I show that deadjectival COS verbs behave just like underived COS verbs in certain degree modification and negation contexts.

3.2.1 *Degree modification contexts*

Two kinds of degree modification contexts distinguish between adjectives and COS verbs. The classic kind of degree modification with intensifiers such as *hěn* ‘very’ (see (14) above), *fēicháng* ‘extremely’ (see (29a)), and post-predicate *jī-le* ‘to the utmost’ illustrated in (29b), is possible for gradable adjectives, as noted earlier.

- (29) (a) shù-yè fēicháng hóng  
 tree-leaf extremely red  
 ‘The leaves are extremely red.’  
 (b) shù-yè hóng jí-le  
 tree-leaf red utmost-PRT  
 ‘The leaves are extremely red.’

They cannot, however, modify a predicate such as *zuì* ‘intoxicated’, and *bìng* ‘sick’, see (30a, b).

- (30) (a) \*Sānmáo hěn/fēicháng zuì/bìng  
 Sanmao very/extremely intoxicated/sick  
 Intended: ‘Sanmao is very/extremely drunk/sick.’  
 (b) \*Sānmáo zuì/bìng jí-le  
 Sanmao intoxicated/sick utmost-PRT  
 Intended: ‘Sanmao is extremely drunk/sick.’

This is not because *zuì* ‘intoxicated’ or *bìng* ‘sick’ are non-gradable. Rather, degree modification for these predicates must be expressed in another way. To encode the attainment of excessive intoxication/illness, a *-de* complement structure is employed, with the modifying phrase *hěn lihai* ‘seriously’, as shown in (31).<sup>15</sup>

- (31) Sānmáo zuì-de/bìng-de hěn lihai  
 Sanmao intoxicated-VPRT/sick-VPRT very serious  
 ‘Sanmao is intoxicated/sick to a serious extent.’

[15] Note that despite the homophony with the associative marker *de* (see footnote 10 above) and the particle *de* in the *shì ... de* construction (see footnote 11 above), this *-de*, glossed VPRT, is written with a different Chinese character. The particle occurs immediately to the right of the verb, and may be followed by adverbial modifiers or resultative complements.

Now putative adjectives such as *gāo* ‘tall/high’, *hóng* ‘red’, *bái* ‘white’, etc., may also combine with *-de hěn lihai* ‘to a serious extent’, as is shown in (32a). Importantly, though, in this case they can only take on a COS interpretation. When modified by *hěn* ‘very’ (32b), the predicate *bái* ‘white’ can describe a congenitally high degree of whiteness in hair. When *bái* ‘white’ occurs with *-de hěn lihai*, it must encode a change to a high degree of whiteness, and (32c) is infelicitous because the context indicates the improbable situation of a baby’s hair somehow either turning white or having turned white at birth.

- (32) (a) Sānmáo de tóufa bái-de hěn lihai  
 Sanmao ASSOC hair white-VPRT very serious  
 ‘Sanmao’s hair turned drastically white.’
- (b) Sānmáo yì shēng-xià-lai tóufa jiù hěn bái  
 Sanmao one born-down-come hair JIU very white  
 ‘Sanmao’s hair was (very) white since birth.’
- (c) #Sānmáo yì shēng-xià-lai tóufa jiù  
 Sanmao one born-come-down hair JIU  
 bái-de hěn lihai  
 white-VPRT very serious  
 ‘Sanmao’s hair turned drastically white the moment he was born.’

What does this pattern of interpretation indicate? Only on the stative interpretation can putative adjectives such as *hóng* ‘red’, *bái* ‘white’, *gāo* ‘tall/high’ combine with degree modifiers such as *hěn* ‘very’. Predicates such as *zuì* ‘intoxicated’ and *bìng* ‘sick’ cannot occur with these modifiers, but rather, must be modified with *de hěn lihai* ‘to a serious extent’. The same holds of the COS interpretation of *hóng* ‘red’, *bái* ‘white’, etc. This indicates that *zuì* ‘intoxicated’ and the COS interpretation of *bái* ‘white’ must share some property. Furthermore, this property cannot be shared between *zuì* ‘intoxicated’ and the stative interpretation of *bái* ‘white’, since the former cannot occur with *hěn* ‘very’. I propose that this property is simply that of being a COS verb. Predicates such as *bái* ‘white’ may correspond either to an adjective or a COS verb. In contrast, *zuì* ‘intoxicated’ can only be a COS verb.

### 3.2.2 Negation

The preceding conclusion receives support from how adjectives and COS verbs interact with negation marking. Researchers have noted that the two negation morphemes in Mandarin, *bù* and *méi*, combine with predicates of different event structure categories. Different explanations have been proposed for these distinctions (Li & Thompson 1981: 421–440; Huang 1988; Ernst 1995; Lin 2003), but one clear contrast is that *bù* is associated with negating the presence of some state, whereas *méi* is associated with

negating the occurrence of an event (Lin 2003). This point is demonstrated by Lin with the examples in (33), with *lǎo* ‘old’. With *bù*, *lǎo* ‘old’ has a stative meaning, see (33a), and with *méi*, it indicates COS, see (33b) (see also Liu 2010: 1036).

- (33) (a) *tā kàn-shàngqu yì diǎn dōu bù lǎo*  
 3SG look-appear one little all NEG old  
 ‘He is not old at all in appearance.’ (Lin 2003: 437, ex. (23))  
 (b) *tā kàn-shàngqu yì diǎn dōu méi lǎo*  
 3SG look-appear one little all NEG old  
 ‘He hasn’t become old at all in appearance.’  
 (Lin 2003: 437, ex. (24))

Turning to basically COS predicates, we find that they cannot be negated using *bù* in a declarative sentence, as shown in (34a).<sup>16</sup> Rather, to claim that someone is not drunk, *méi* must be used (34b).

- (34) (a) \**Sānmao bú zuì*  
 Sanmao not intoxicated  
 Intended: ‘Sanmao isn’t/didn’t get drunk.’  
 (b) *Sānmáo méi zuì*  
 Sanmao not intoxicated  
 ‘Sanmao isn’t/didn’t get drunk.’

Converging with this contrast, Lin (2003) notes that certain adjectives, such as *cōngmíng* ‘intelligent’ – essentially those that describe human propensities (Dixon 1982: 21) – cannot be negated by *méi*, as shown in (35b). This would mean that such adjectives have no COS counterparts.

- (35) (a) *tā bù cōngmíng*  
 3SG NEG intelligent  
 ‘He is not clever.’  
 (b) \**tā méi cōngmíng*  
 3SG not intelligent  
 ‘He has not turned clever.’ (Lin 2003: 437, ex. (25))

The negation patterns support the hypothesis that verbs such as *zuì* ‘intoxicated’ are basically COS, and thus also eventive, since they allow negation by *méi* but not by *bù*. They also support the related hypothesis that predicates such as *lǎo* ‘old’ (also *gāo* ‘tall/high’ and *hóng* ‘red’, discussed above) have both state and COS meanings. Finally, human propensity

[16] Negation with *bu* is possible in a covert conditional clause, such as (i):

(i) *wǒmen bú zuì bù guī*  
 IPL NEG intoxicate NEG return  
 ‘We won’t go home till we’re drunk.’

adjectives such as *cōngmíng* ‘intelligent’ seem to be stative only, as also suggested by their incompatibility with *-le* (Liu 2010: 1035):<sup>17</sup>

- (36) \*Zhāngsān cōngmíng/bèn le  
 Zhāngsān smart/stupid PERF  
 ‘Zhāngsān got smart/stupid.’ (Liu 2010: 1035, ex. (83a))

### 3.2.3 Interim summary

To sum up, predicates such as *lǎo* ‘old’, *hóng* ‘red’, *guì* ‘expensive’, *zāng* ‘dirty’, and *pàng* ‘plump, fat’ occur with degree modifiers such as *hěn* ‘very’ and *fēichāng* ‘extremely’, and are negated with *bù*, on a stative interpretation. In such cases, the predicate may be assumed to be an adjective. These predicates may also occur with *méi* ‘not’ and be modified with *-de hěn lihai* ‘to a serious extent’, but only on a COS interpretation. In such cases, we may consider them COS verbs. In contrast, verbs such as *zuì* ‘intoxicated’ and *bìng* ‘sick’ are basically COS. They cannot be modified with *hěn* ‘very’ and *fēichāng* ‘extremely’, but only with *-de hěn lihai* ‘to a serious extent’. They can only be directly negated by *méi*, and not by *bù*. These patterns are set out in (37):

- (37) *Modification patterns of adjective/COS verb alternation pairs and basic COS verbs*

Examples of predicates	<i>lǎo</i> ‘old’, <i>hóng</i> ‘red’	<i>zuì</i> ‘intoxicated’, <i>bìng</i> ‘sick’	
Modifiers	Adjective	Derived COS verb	Basic COS verb
<i>hěn</i> ‘very’	OK	*	*
<i>-de hěn lihai</i> ‘to a serious extent’	*	OK	OK
<i>bù</i> NEG	OK	*	*
<i>méi</i> NEG	*	OK	OK

[17] There may be speaker variation as to the (un)acceptability of examples such as (36). For me, (36) is acceptable, but in agreement with Lin’s judgement, (35b) is not. I speculate that the COS reading of (36) allowed by speakers like myself could arise from pragmatic coercion (Koontz-Garboden 2007a), rather than a derived COS status for *cōngmíng* ‘intelligent’. Thus, the generalization that human propensity adjectives do not have COS counterparts would still hold.

Strictly speaking, these patterns allow us to conclude only that *hóng* ‘red’, *gāo* ‘tall/high’, etc. alternate between state and COS, whereas predicates such as *zuì* ‘drunk’, *bìng* ‘sick’, etc. are simply COS verbs. They do not immediately lead to the conclusion that the stative meanings of the alternating predicates are rendered by adjectives. That is, these diagnostics per se cannot yet rule out the possibility that *hóng* ‘red’, *gāo* ‘tall/high’, etc. are simply verbs with both state and COS interpretations. Below, I show that these predicates can and should be distinguished from stative verbs.

### 3.3 Distinguishing adjectives from stative verbs

It should be clear from the preceding discussion that adjectives such as *bái* ‘white’ and *gāo* ‘tall/high’ exhibit both stative and COS interpretations. I have proposed specifically that the COS interpretation arises from a deadjectival COS verb. This implies an assumption that the COS interpretation is structurally encoded, rather than arising pragmatically through some kind of coercion (Koontz-Garboden 2007a). In this subsection, I provide evidence for this proposal by contrasting the consistent nature of deadjectival COS readings with COS readings of stative verbs that are also available, but less consistently. This, then, gives us yet another distinction between adjectives and stative verbs, strengthening the position that adjectives form an independent class.

In the examples discussed above, e.g. (16b), repeated below, the hypothesized deadjectival COS verb occurs in the presence of the aspectual marker *-le*. It is thus tempting to ascribe the COS interpretation to *-le*. But if *gāo* ‘tall/high’ here is a COS verb, this predicts that the COS interpretation would be available even without *-le*.

- (16) (b) *bìng-ren xuè-yā gāo-le*  
 sick-person blood-pressure high-PERF  
 ‘The patient’s blood pressure has risen.’

This is indeed the case. Sybesma (1997) notes that the COS interpretation of such predicates is available even in the absence of *-le*, e.g. when a modal is present, as the following examples, from Sybesma (1997: 230, ex. (21)), show.<sup>18</sup>

- (38) (a) *tā néng gāo*  
 3SG can tall  
 ‘He can become tall.’  
 (b) *tā huì pàng*  
 3SG can fat  
 ‘He may become fat.’

[18] All glosses and free translation from the original.

- (c) *tā yào hǎo*  
 3SG will good  
 ‘He will get better.’

Moreover, as examples such as (25) and (26) above show, even basically COS verbs such as *bìng* ‘sick’ in simple predication sentences occur with *-le*. Thus, the assumption that *gāo* ‘tall/high’ in (16b) is also a COS verb is entirely compatible with the presence of *-le*.<sup>19</sup>

More importantly, the COS interpretations of these hypothesized deadjectival verbs are consistently available in these modal and perfective contexts. They contrast with stative verbs such as *xiāngxìn* ‘believe’ and *xǐhuān* ‘like’, which also allow COS interpretations in the presence of *-le*, and modal verbs like *huì* ‘will’, but are less consistent in this respect. The examples in (39), from the Peking University Center for Chinese Linguistics Corpus (henceforth PKU; [http://ccl.pku.edu.cn:8080/ccl\\_corpus/index.jsp?dir=xiandai](http://ccl.pku.edu.cn:8080/ccl_corpus/index.jsp?dir=xiandai)), illustrate the stative verbs *xǐhuān* ‘like’ and *xiāngxìn* ‘believe’ taking on COS interpretations with perfective *-le*.

- (39) (a) *tā zhújiàn shìying-le, xǐhuān-le Měilán gěi tā*  
 3SG eventually accustomed-PERF like-PERF Meilan give 3SG  
*ānpái de shūshì ér yòu héli*  
 arrange VPRT comfortable and additionally reasonable  
*de shēnghuó*  
 ASSOC life  
 ‘He eventually became accustomed to, and began to like, the comfortable and reasonable life Meilan had arranged for him.’ (PKU)
- (b) *jiēchù-le sān cì zhīhòu, Fǎguóren xiāngxìn-le*  
 contact three times after French.people believe-PERF  
*Wēituōfū de chéngyì*  
 Vitov ASSOC sincerity  
 ‘After three meetings, the French started to believe in Vitov’s sincerity.’ (PKU)

While a COS interpretation does arise and indeed is a natural interpretation for a stative verb with *-le*, it is possible to find instances of a stative verb with *le* that are not interpreted as COS. For instance, *xiāngxìn-le* ‘believe-PERF’ in (40) below could – but need not – mean that people started to believe in the myth of Japanese institutions’ invincibility. The sentence could

[19] On the other hand, my analysis also predicts that (17a) should have a COS meaning as well. It does not, but this is not necessarily a counterexample to my proposal, given that what I am assuming to be underived COS verbs also do not occur as a matrix verb without *-le*. That is, (25) and (26) above would be ungrammatical without *-le*. For a possible explanation, see Tsai (2008).

also mean that people believed in the myth for a period before the reference time of the sentence. This is not possible for sentences such as (16b) above.

- (40) *jīnróng jiānguǎn dāngjú hé Rìběn zhèngfǔ guò duō*  
 finance oversee authority and Japan government over many  
*bǎohù jīnróng jīgòu, rénmen xiāngxìn-le Rìběn*  
 protect finance institution people believe-PERF Japan  
*jīgòu bú huì dǎobì de shénhuà*  
 institution will not collapse ASSOC myth  
 ‘The financial oversight authority and the Japanese government overly protect financial institutions, people believed the myth that Japanese institutions will not collapse.’ (PKU)

Finally, in modal verb contexts, deadjectival COS verbs again consistently yield a COS interpretation, whereas stative verbs do not do so. For instance, *huì gāo* ‘will (be) tall’ in (41a) has only a COS interpretation. This is not because *huì* ‘will’ cannot combine with stative predicates, as the stative *huì hěn gāo* ‘will (be) very tall’ in (41b) shows.<sup>20</sup>

- (41) (a) *Sānmáo xiànzài hěn gāo, yǐhòu hái huì gāo*  
 Sanmao now very tall afterwards still will tall  
 ‘Sanmao is (very) tall now, and will be taller in future.’  
 (b) *Sānmáo xiànzài hěn gāo, yǐhòu hái huì hěn gāo*  
 Sanmao now very tall afterwards still will very tall  
 ‘Sanmao is (very) tall now, and will still be (very) tall in future.’

In contrast, stative verbs in the presence of *huì* ‘will’ do not necessarily take on a COS interpretation. For instance, (42a, b) are compatible with a COS interpretation for *xǐhuān* ‘like’ and *xiāngxìn* ‘believe’, but they could also be interpreted as claiming that the state of liking/believing will hold at a future time.

- (42) (a) *nǐ yídìng huì xǐhuān tāmen*  
 2SG definitely will like 3PL  
 ‘You will definitely like them.’  
 (b) *nǐ yídìng huì xiāngxìn tāmen*  
 2sg definitely will believe 3PL  
 ‘You will definitely believe them.’

Strikingly, *xǐhuān* ‘like’ and *xiāngxìn* ‘believe’ with *huì* in (43) do not allow a COS interpretation. That is, whether or not *hěn* ‘very’ is present in the second clauses of (43a, b), neither verb can be interpreted as COS.

[20] In addition, *Sānmáo huì gāo* (lit. ‘Sanmao will (be) tall’) may have a stative, comparative interpretation, meaning ‘Sanmao will be taller (than someone else)’ (compare (17a) above), though this is less obvious than the COS interpretation.

- (43) (a) Sānmáo xiànzài hěn xǐhuān tāmen, yǐhòu hái huì  
 Sanmao now very like 3PL afterwards still will  
 (hěn) xǐhuān tāmen  
 very like 3PL  
 ‘Sanmao likes them a lot now, and will still like them (a lot) in future.’  
 Not: ‘Sanmao will like them more in future.’
- (b) Sānmáo xiànzài hěn xiāngxìn tāmen, yǐhòu hái huì  
 Sanmao now very believe 3PL afterwards still will  
 (hěn) xiāngxìn tāmen  
 very believe 3PL  
 ‘Sanmao believes in them a lot now, and will still believe in them (a lot) in future.’  
 Not: ‘Sanmao will believe in them more in future.’

The examples above demonstrate that stative verbs such as *xǐhuān* ‘like’ and *xiāngxìn* ‘believe’ do not consistently show COS interpretations in *-le* and modal contexts, while they consistently allow stative interpretations. This contrasts with deverbal adjectives, for which COS interpretations with perfective *-le* and modal verbs such as *huì* ‘will’ arise consistently. This suggests that the COS interpretation of stative verbs with *-le* and modals may arise from pragmatic coercion, whereas that of deadjectival COS verbs is structurally encoded.

To capture this consistent alternation between adjectives and their COS verb counterparts, I assume that a regular derivation is available in Mandarin that converts gradable adjectives such as *bái* ‘white’ and *gāo* ‘tall’ into COS verbs. I assume that this operation has a semantic component corresponding to a version of Dowty’s (1979) BECOME operator, as well as a morphological component that converts an adjective to a verb. This derivation would apply to an adjective representation such as (44a), to yield a COS verb representation such as (44b).

- (44) (a) *bái*<sub>A<sub>dj</sub></sub> ‘white’:  $\lambda x \lambda s$  white’(x)(s)  
 (b) *bái*<sub>V</sub> ‘become white’:  $\lambda x \lambda s \lambda e$  [BECOME(s)(e)  $\wedge$  white’(x)(s)]

This operation does not apply to stative verbs such as *xǐhuān* ‘like’, which only have a stative meaning. Finally predicates such as *zuì* ‘become intoxicated’ and *bìng* ‘become sick’ are uniformly COS verbs, as shown in the representation in (45).

- (45) (a) *zuì*<sub>V</sub> ‘become intoxicated’:  $\lambda x \lambda s \lambda e$  [BECOME(s)(e)  $\wedge$  intoxicated’(x)(s)]  
 (b) *bìng*<sub>V</sub> ‘become sick’:  $\lambda x \lambda s \lambda e$  [BECOME(s)(e)  $\wedge$  sick’(x)(s)]

Such verbs are not derived from adjectives, nor may deverbal adjectives be productively derived from them, as I argue in the next section.

Before leaving this subsection, let me clarify that there are, of course, alternatives to the treatment of deadjectival COS verbs as rule-derived

proposed here. It would not make a substantive difference to the analysis were the alternation to be represented as, say, a systematic set of COS verbs homophonous with, and related by the BECOME operator to, gradable adjectives. The key point I wish to convey is the regular, productive nature of the relation, and the actual representation is not my main concern. I am inclined towards the derivational approach, however, because the listing of separate lexical entries would seem to suggest a less systematic alternation, one that is available only for specific lexical items. Indeed, this is what I assume for the deverbal adjectives discussed below.

Summarizing, the COS interpretations of adjectives observed in perfective and modal contexts are consistently available, and should be treated as formally represented. Although stative verbs such as *xǐhuān* ‘like’ and *xiāngxìn* ‘believe’ also allow COS interpretations in these contexts, they are not consistently available, and are better treated as arising pragmatically.

We saw earlier that an adjective in a positive declarative clause requires a degree modifier for a positive degree interpretation, while stative verbs do not need a modifier. I have now shown that adjectives can be further distinguished from stative verbs in terms of whether their COS interpretations are consistently available. I have also shown that deadjectival COS verbs behave just like basic, underived COS verbs, which do not have stative counterparts.

#### 4. DEVERBAL ADJECTIVES: ATTESTED BUT NOT PRODUCTIVE

In this section, I examine the relationship between Mandarin verbs and adjectives in the other direction, exploring whether result state adjectives may be systematically derived from COS verbs and RVCs. As hinted above, I show that the answer is in the negative: Although deverbal result state adjectives do exist, I argue that they do not stem from a productive derivational process or systematic polysemy. Rather, I argue that deverbal result state adjectives are allowed when the modified NP in which they occur describes a culturally or contextually salient class of entities (Bolinger 1967, Paul 2006). I assume that these deverbal adjectives are either separately listed in the lexicon or are formed ‘on the fly’ in an appropriate context.<sup>21</sup>

##### 4.1 *No regular derivation of adjectives from COS verbs*

I first consider COS verbs. I show that, although COS verbs may be derived from gradable adjectives, the relationship does not hold equally in the

[21] In what follows, I will simply use the term ‘deverbal adjectives’, meaning deverbal result state adjectives. There are other kinds of adjectives derived from verbal elements in Mandarin, including verb–object compounds, e.g. *yǒu-qián* ‘rich’ (lit. ‘have money’), and certain adverb–verb compounds, e.g. *hǎo-chī* ‘tasty’ (lit. ‘good-eat’). These adjectives are outside the scope of this paper.

other direction. That is, COS verbs, both intransitive and transitive (i.e. RVCs), do not lend themselves to the formation of derived adjectives. I first show that these verbs in predicative position are not stative. That is, COS verbs do not productively form result stative predicates. I then show that in general, COS verbs cannot modify nominals without the mediation of *de*, and these verbs have eventive interpretations in modifier position as well, suggesting that they occur in relative clauses. That is, not only do COS verbs have no regular derived result state counterparts, they also have no regular derived adjectival counterparts. There is, however, a slight asymmetry between intransitive COS verbs and RVCs. The former allow limited pre-nominal modification without *de*, suggesting that they occasionally form deverbal adjectives. The latter, however, do not seem to allow any deverbal adjective formation.

#### 4.1.1 *COS verbs in predicative position*

The degree modification and negation contexts used to distinguish adjectives from intransitive COS verbs in the last section reflect the eventive nature of these verbs. Using these contexts as diagnostics, predicates such as *liè* ‘crack’ in (11) above and *sui* ‘shatter’, which may be modified by *-de hěn lihai* ‘to a serious extent’ but not by *hěn* ‘very’, and are negated by *méi* but not by *bù*, may be classified as COS verbs.<sup>22</sup> At least prima facie, there is no reason to believe that such verbs have a (zero-)derived stative form.

Now, RVCs such as *qiāo-suì* ‘knock-shatter’ in (46a) below may not be modified by *hěn* ‘very’ (presumably because they are eventive), nor by *-de hěn lihai* ‘to a serious extent’ (probably because they are not gradable). Still, like intransitive COS verbs such as *liè* ‘crack’ and *sui* ‘shatter’, they are also negated with *méi* rather than *bù*, as seen in (46b), indicating that they are non-stative.

- (46) (a) Sānmáo qiāo-suì-le                      bēizi  
 Sanmao knock-shatter-PERF cup  
 ‘Sanmao knocked on the cup, causing it to shatter.’  
 (b) Sānmáo méi/\*bù qiāo-suì              bēizi  
 Sanmao NEG knock-shatter cup  
 ‘Sanmao didn’t cause the cup to shatter by knocking on it.’

That is, causative RVCs differ from COS verbs in having a causer argument, but otherwise are equally consistently eventive with respect to the relevant diagnostics. I now show that detransitivized forms of causative RVCs are also eventive and not stative.

[22] Again, negation of COS verbs, including RVCs, with *bù* may take place in certain modal contexts, see footnote 16 above.

Causative RVCs in Mandarin show a transitivity alternation demonstrated in (47):

- (47) (a) Sānmáo qiāo-suì-le                      bēizi  
 Sanmao knock-shatter-PERF cup  
 ‘Sanmao knocked on the cup, causing it to shatter.’  
 (b) bēizi qiāo-suì-le  
 cup knock-shatter-PERF  
 ‘The cup got knocked on and shattered.’

Tan (1991) argues that these are zero-derived passive verbs, with no agent phrase realized. A similar assumption is made in Ting (2006), where these verbs are called middles. For current purposes, the actual label is unimportant. The crucial point is that Mandarin RVCs show detransitive uses in which the patient nominal is realized as subject (see Tan 1991 and Ting 2006 for arguments to this effect).

These detransitive uses retain an agentive meaning, however, as illustrated by their compatibility with agent and instrument phrases (Keyser & Roeper 1984), in (48a). In contrast, (48b) shows that the COS verb *sui* ‘shatter’ itself is non-agentive.

- (48) (a) bēizi yóu tāmen/yòng chuí-zi      qiāo-suì-le  
 cup by 3PL/use hammer knock-shatter-PERF  
 ‘The cup was shattered by them/with a hammer’.  
 (b) \*bēizi yóu tāmen/yòng chuí-zi      suì-le  
 cup by 3PL/use hammer shatter-PERF  
 ‘The cup shattered \*by them/\*with a hammer.’

Unsurprisingly, the agentive detransitive RVC is also eventive. Like *sui* ‘shatter’, discussed above, and transitive *qiāo-sui* ‘knock-shatter’ (see (46b)), the detransitivized RVC *qiāo-sui* ‘knock-shatter’ in (49) is also negated by *méi*.

- (49) bēizi méi/\*bù qiāo-suì  
 cup NEG knock-shatter  
 ‘The cup didn’t get shattered from being knocked on./The cup was not knocked on.’

Such examples suggest that detransitive RVCs in predicate position, like their transitive counterparts and like intransitive COS verbs, do not have stative readings. I assume that *qiāo-sui* ‘knock-shatter’ in (49) has a lexical representation corresponding to a passive verb, along the lines of (50), with its agent argument existentially bound.<sup>23</sup>

- (50)  $\lambda y \lambda s \lambda e' \lambda e \exists x [\text{BECOME}(s)(e) \wedge \text{shattered}'(y)(s) \wedge \text{CAUSE}(e', e) \wedge \text{knock}'(x, y)(e')]$

[23] For arguments that RVCs assert change of state, with the causing activity subordinate to it at least semantically, see Chief & Koenig (2007), Tham (2012).

I show further below that such predicates in attributive position concomitantly do not show adjectival behaviour in general.

#### 4.1.2 *No RVC-derived adjectives*

In this subsection, I turn to RVCs in attributive position, and show that these verbs do not lend themselves to deverbal adjective formation. Two points demonstrate this. First, RVCs can only modify nominals in the presence of *de*, and second, they may always retain their original agentive and eventive interpretations. The examples in (51) show that an RVC such as *dǎ-pò* ‘break’ (lit. ‘hit-break’) cannot modify a noun in the absence of *de*.<sup>24</sup>

- (51) (a) yì zhī dǎ-pò de bēizi  
 one CL hit-break ASSOC cup  
 ‘a broken cup’  
 (b) \*yì zhī dǎ-pò bēizi  
 one CL hit-break cup  
 ‘a broken cup’

The following examples show that an RVC in prenominal position continues to be agentive (52a), and eventive (52b).

- (52) (a) yì tái yóu xīn yuángōng nòng-huài de jīqì  
 one CL by new employee make-bad ASSOC machine  
 ‘a machine that was broken by (a) new employee(s)’  
 (b) yì tái méi/\*bú nòng-huài de jīqì  
 one CL NEG make-bad ASSOC machine  
 ‘a machine that was not broken’

These converge with the obligatory presence of *de*. While any phrase may combine with *de* to modify a noun (20c), only adjectives may directly modify a noun without *de*. That RVCs cannot do so suggests they are verbs here. That they allow agentive and eventive interpretations indicates the same. That is, examples such as (51a) contain a relative clause modifier. Below, I show that COS verbs are somewhat more flexible than RVCs, but they also do not productively form the base for a derived adjective.

#### 4.1.3 *No COS-derived adjectives*

I now show that basic intransitive COS verbs do not regularly give rise to adjectives. I argue that although some basic COS verbs appear to engage in

[24] With certain RVCs, such as *dǎ-kāi* ‘open (causative)’ (see Section 4.2 below), it may be possible to obtain a stative reading in prenominal modification position: *yì bǎ dǎ-kāi de sǎn* ‘one CL hit-open ASSOC umbrella’ (PKU) may mean an umbrella that is open, not necessarily one that has been opened, though that reading is also possible. It seems to me that stative readings are more easily available for RVCs in which the result is a spatial configuration. As far as I can see, RVCs such as *dǎ-pò* ‘hit-break’ and *nòng-huài* ‘make-bad’ do not have a stative interpretation.

adjectival behaviour, this pattern is not productive, and in some cases, must receive a V–N compounding analysis.

I demonstrate this generalization first with the verb *miè* ‘extinguish’ in (26b), repeated here.

- (26) (b) huǒ miè-le  
 fire extinguish-PERF  
 ‘The fire went out.’

Unlike *zui* ‘intoxicated’ and *bìng* ‘sick’ discussed in Section 3 above, the verb *miè* ‘extinguish’, is not gradable, as shown in (53a). It is, however, negated using *méi* rather than *bù*, as (53b) shows, consistent with its COS interpretation in (26b).<sup>25</sup>

- (53) (a) \*huǒ miè-de hěn lihai  
 fire extinguish-VPRT very serious  
 (b) huǒ méi/\*bù miè  
 fire NEG extinguish  
 The fire isn’t extinguished.

(53b) indicates that *miè* is a COS verb. The contrast in (54) below shows that *miè* ‘extinguish’ cannot directly modify a noun, see (54a). The verb *miè* ‘extinguish’ can only occur prenominally within a relative clause, as in (54b), which the preferred presence of *-le* further suggests.

- (54) (a) \*yì gēn miè làzhú  
 one CL extinguish candle  
 Intended: ‘an extinguished candle’  
 (b) yì gēn miè(-le) de làzhú  
 one CL extinguish-PERF ASSOC candle  
 ‘an extinguished candle’

Some COS verbs such as *pò* ‘break’ and *huài* ‘break down’ in (55) sometimes seem able to directly modify a noun, but I would argue that, to the extent that *pò* ‘break’ and *huài* ‘break down’ are adjectival, it is probably via some kind of pragmatic coercion, or due to analogy with homophonous adjectives, which I describe immediately below.

- (55) (a) ?yì zhī pò bēizi  
 one CL break ASSOC cup  
 ‘a broken cup/a shabby cup’

[25] Note again that negation of *miè* ‘extinguish’ with *bù* is unacceptable only on the intended interpretation ‘The fire isn’t extinguished’. Negation with *bù* is possible under a modal interpretation: *huǒ bù miè* (lit. ‘fire NEG extinguish’) has a felicitous interpretation as ‘The fire will not go out’. See also footnotes 16 and 22 above. In addition, as should also be expected, *miè* ‘extinguish’ cannot take modifiers such as *hěn* ‘very’ and *fēicháng* ‘extremely’.

- (b) ?yì tái huài jīqì  
 one CL break.down machine  
 ‘a broken down machine’
- (c) ...tuī-zhe huài chē lái zhǎo nǐ  
 push-DUR break.down car come seek 2SG  
 ‘pushing a broken down car to come looking for you.’ (PKU)

Several intransitive predicates, including *pò* ‘shabby/break’ and *huài* ‘bad, wicked/break down’, actually each have two senses, one corresponding to an adjective and one to a COS verb. The form *pò* may be adjectival, meaning ‘shabby, of poor quality’, or it may be a COS verb, meaning ‘break’. Consistent with the current assumptions, the adjectival sense occurs felicitously in attributive position without the associative marker *de* when modifying a nominal, but the verbal sense is far less felicitous in this position.

A search on the PKU corpus for the two senses of *pò* provides support for this interpretation. A search for *pò fángzi* ‘shabby house’, which shows the adjectival sense of *pò*, yielded 84 examples in the relevant sense. A search for *pò bēizi* ‘broken cup’, which taps the COS sense, yielded only two relevant examples, and only one of these clearly involved a broken cup, while the other could be interpreted as describing a cup in poor condition. Modification contexts suggest the same division. The sixteen instances of *hěn pò* in the PKU corpus could all be interpreted as ‘very shabby’. The objects described included machines, vehicles, furniture, books, shoes and cloth items, but not brittle objects such as cups and vases that typically break or shatter. In cases involving items made from cloth or paper, *pò* could also have meant ‘torn’, but each example was equally compatible with a ‘shabby’ interpretation. To supplement the PKU data, I also conducted informal Google searches for certain strings. Tellingly, a Google search for *huāping hěn pò* ‘vase very shabby’ turned up only one example, and that single instance clearly meant that the vase in question was of poor quality. A Google search for *bēizi hěn pò* returned 10 usable results.<sup>26</sup> Of these, there were six unique examples, all with a ‘shabby cup’ interpretation. A PKU search for *pò de hěn lihai* ‘badly broken’ returned no results, but a Google search returned numerous instances, many describing human skin being broken, a situation hardly conceivable as shabbiness. This result is compatible with the understanding that *-de hěn lihai* ‘to a serious extent’ modifies a COS verb (see Section 3.2.1 above), which in the case of *pò* would correspond to the ‘break’ sense rather than the ‘shabby’ sense.

Similarly, the form *huài* may correspond to either a COS verb meaning ‘to break down’ (as of machines), or an adjective meaning ‘bad’ or ‘wicked’

[26] There were 13 results in total, but in one case the character for *bēi* ‘cup’ was clearly an erroneous substitution for another character, in another case, the example was unintelligible to me, and in yet another, the string could not be found on the linked page.

(of people).<sup>27</sup> This distinction underlies the contrast in acceptability of the examples in (56)–(57).

- (56) (a) \*zhè gè nàozhōng hěn huài  
           this CL alarm.clock very bad  
           Intended: ‘This alarm clock is very faulty.’  
       (b) zhè gè nàozhōng huài-de hěn lihai  
           this CL alarm.clock bad-VPRT very serious  
           ‘This alarm clock is badly broken.’
- (57) (a) zhè gè rén hěn huài  
           this CL person very bad  
           ‘This person is wicked.’  
       (b) \*zhè gè rén huài-de hěn lihai  
           this CL person bad-VPRT very serious  
           Intended: ‘This person became seriously wicked.’

The sense of *huài* describing mechanical malfunction cannot be modified by *hěn* ‘very’, as is shown in (56a), but allows degree modification with *-de hěn lihai* ‘to a serious extent’, as in (56b), both hallmarks of a COS verb. The sense of *huài* describing a character flaw behaves in exactly the opposite way, as seen in (57).

A PKU search for *huài N* also yielded results consistent with the assumption that its COS, ‘break down’ sense would be less available in prenominal position than the adjectival sense of ‘bad/wicked’. A search for the string *huài chē* ‘broken down car’ yielded six relevant examples, and *huài jīqì* ‘broken machine’ yielded no results. In contrast, the search string *huài háizi* ‘naughty child’ yielded 90 examples.<sup>28</sup>

Some other COS verbs, such as *bìng* ‘sick’, also seem able to directly modify nouns, e.g. *bìng-rén* ‘patient, lit. sick person’, *bìng-fáng* ‘sick room’. But these sequences are best considered V–N compounds as their meanings are non-transparent. A *bìng-rén* ‘patient’ is not necessarily ill, while *bìng de rén* ‘sick person’, where *de* here can be treated as marking a relative clause, does describe someone who is ill. And a *bìng-fáng* ‘sick room’ clearly does not describe a room that is ill, but a room for sick people, and *\*bìng de fáng* ‘sick ASSOC room’ is correspondingly unacceptable.

[27] Other similar verb/adjective pairs include *fēng* ‘zany (Adj)/to go crazy (V)’, and *hǎo* ‘good (Adj)/to recover (V)’. Zhu (1982: 56) notes also *sì* ‘inflexible (Adj)/to die (V)’.

[28] For reasons unknown to me, all of the predicates discussed above showed very few instances of prenominal modification with *de* in the PKU data. In each example, the predicate was modified as shown. I note the number of relevant examples found for each string next to it, in parentheses: *yǐ huài de chē* ‘already broken down car’ (1); *zuì huài de háizi* ‘naughtiest child’ (lit. ‘most naughty child’) (2); *pò de bēizi* ‘broken cup’ (0), *pò de huāpíng* ‘broken vase’ (0); *gèng pò de fángzi* ‘even shabbier house’ (lit. ‘even.more shabby house’) (1).

On the basis of these generalizations, I conclude that intransitive COS verbs also do not constitute a regular basis for deverbal adjective formation, although in Section 4.4.2 below I will discuss why they seem to allow limited adjective formation.

#### 4.2 *Characterization: the shì ...de construction*

The preceding conclusions notwithstanding, there actually is one way to encode stative interpretations of COS verbs and RVCs. This is by way of the *shì ... de* construction illustrated in (58a, b), briefly mentioned in the discussion of (18) above, where *shì* ‘be’ is the copula found in nominal predication sentences.

- (58) (a) zhè zhī wǎn shì liè(-le) de  
 this CL bowl be crack-PERF DE  
 ‘This bowl is cracked.’  
 (b) hézi shì dǎ-kāi(-le) de  
 box be hit-open-PERF DE  
 ‘The box is open(ed).’  
 (c) gōngren dǎ-kāi-le hézi  
 worker hit-open-PERF box  
 ‘The worker opened the box.’

The examples in (58a, b) are compatible with a result state interpretation. The COS verb and RVC allow the presence of perfective *-le*, which would indicate that the cracked/opened state has arisen from a preceding event. Example (58c) simply shows that *dǎ-kāi* ‘open’ is a causative RVC. A *shì ... de* sentence itself is stative. As (59) shows, a *shì ... de* sentence may be negated by *bù*, but not *méi*.<sup>29</sup>

- (59) (a) zhè zhī wǎn bú/\*méi shì liè de  
 this CL bowl NEG be crack DE  
 ‘This bowl is not cracked.’  
 (b) hézi bú/\*méi shì dǎ-kāi de  
 box NEG be hit-open DE  
 ‘The box is not open(ed).’

As I show below, *shì ... de* sentences containing COS verbs also have a stative interpretation that is not necessarily interpreted as the result of an event, see (60).

[29] Being non-gradable, *shì ... de* sentences may not occur with either *hěn* ‘very’ or *-de hěn lihai* ‘to a serious extent’.

- (60) (a) zhè zhǒng zhìzào guòcheng bǎozhèng zào-chūlai  
 this kind manufacture process guarantee create-out  
 de jìngzi shì liè de  
 ASSOC mirror be crack DE  
 ‘This kind of manufacturing process guarantees that the mirrors  
 produced are cracked (ones).’
- (b) zhè xiē hézi zǔzhuāng-hǎo shí shì dǎ-kāi de  
 this PL box assemble-good time be hit-open DE  
 ‘These boxes are open when assembled.’

Despite the stativizing effect of *shì ... de*, I argue that it should not be understood as a construction that is specialized to deriving result states from COS verbs. Rather, *shì ... de* is best understood as providing a characterizing description of an object. This understanding will pave the way for the rest of the discussion, where I show that deverbal adjectives show precisely this quality.

First, consider that the predicates in (58a, b) above may be interpreted as describing original states of the relevant entity, not necessarily as states resulting from an event. This interpretation may be teased out via a ‘creation’ context present in the examples in (60) above. In these creation contexts, the states of being cracked or open cannot be understood as arising from a preceding cracking or opening event.<sup>30</sup> Therefore, the examples in (61a, b), where the perfective marking on these verbs indicates that a cracking or opening event occurred, are infelicitous. (Without the given creation context, e.g. as in (58), perfective *-le* would be felicitous.)

- (61) (a) #zhè zhǒng zhìzào guòcheng bǎozhèng zào-chūlai de  
 this kind manufacture process guarantee create-out ASSOC  
 jìngzi shì liè-le de  
 mirror be crack-perf DE  
 Intended: ‘This kind of manufacturing process guarantees that the  
 mirrors produced have cracked.’
- (b) #zhè xiē hézi zǔzhuāng-hǎo shí shì dǎ-kāi-le de  
 this PL box assemble-good time be hit-open-PERF DE  
 Intended: ‘These boxes are open(ed) when assembled.’

In (60), then, *liè* ‘crack’ and *dǎ-kāi* ‘open (causative)’ could be interpreted as zero-derived adjectival counterparts of a COS verb and RVC. However, this predicative use is not available outside the *shì ... de* context, as indicated by the examples in (62), nor can these forms occur prenominal without *de*,

[30] This also means that the semantic representation of these predicates has to be adjusted accordingly, so that the result state described arises from a change defined along a spatial or physical dimension rather than from a change that takes place in time (Gawron 2009, Koontz 2012).

as shown by (63), in agreement with the claims made earlier that COS verbs and RVCs have no derived stative and adjectival counterparts.

- (62) (a) \*zhè miàn jìngzi (shì) liè  
           this CL mirror be crack  
           Intended: ‘This mirror is cracked.’  
 (b) \*zhè gè hézi (shì) dǎ-kāi  
           this CL box be hit-open  
           Intended: ‘This box is open(ed).’
- (63) (a) \*yì miàn liè jìngzi  
           one CL crack mirror  
           Intended: ‘a cracked mirror’  
 (b) \*yì zhī dǎ-kāi hézi  
           one CL hit-open box  
           Intended: ‘an open(ed) box’

This means that, in keeping with my preceding conclusions, even if *liè* ‘crack’ and *dǎ-kāi* ‘open (causative)’ in (60) were derived adjectives, such adjectives are not systematically available.

What of the role of *shì ... de*, then? Besides COS verbs and RVCs, other kinds of predicates also occur in the *shì ... de* context, including adjectives, shown in (64a), and both simple and complex verb phrases, shown in (64b, c), none of which has a result state interpretation. This, then, means that *shì ... de*, while it has a stativizing effect, should not be considered a morphological context specialized for deriving result state predicates from COS verbs and RVCs.

- (64) (a) zhè gè pánzi shì fāng de  
           this CL plate be square DE  
           ‘This plate is square.’  
 (b) zhè xiē dōngxi shì mài de  
           this PL thing be sell DE  
           ‘These things are for sale.’ Not: ‘These things are sold.’  
 (c) zhè zhǒng niǎo shì wǎnshàng chàng gē de  
           this CL bird be night sing song DE  
           ‘This kind of bird sings at night.’

What the *shì ... de* context actually does, I suggest, is to indicate that the predicate it combines with provides a description that characterizes the referent of the subject nominal as a member of a class that is salient in some way (Bolinger 1967). This is illustrated by the examples in (65), in which (65a) can be felicitously continued by (65b), but not by (65c).

- (65) (a) wǒ bù néng lái jì nǐ  
           1SG NEG can come fetch 2SG  
           ‘I can’t come to pick you up.’

- (b) wǒ de chē huài-le  
 ISG ASSOC car break.down-PERF  
 ‘My car broke down.’
- (c) #wǒ de chē shì huài de  
 Isg ASSOC car be break.down DE  
 ‘My car is (a) broken (one).’

In contrast, a mechanic who is starting work at an automobile repair shop would quite likely be informed that the cars parked on the west side of the parking lot are ‘broken down’ (i.e. *shì huài de*), rather than they ‘broke down’ (i.e. *huài-le*). This suggests that the *shì ... de* context expresses a characterizing interpretation of the predicate it combines with. For an owner of a car, a breakdown is a temporary situation that could perhaps prevent the owner from using the car in certain ways, but it would not typically be described as a characteristic property of the car. For a mechanic, however, cars that have broken down would constitute a category of things in need of professional attention (see also Section 4.4.2 and footnote 35 below). This assumption is compatible with the proposal that the stative interpretations of *liè* ‘crack’ and *dǎ-kāi* ‘open’ with *shì ... de* in (60) arises pragmatically. Mirrors that are produced to be cracked are quite plausibly understood as a particular category of, say, specialty items for sale. Similarly, it might well interest a packaging company whether the boxes to be used for packaging are open or closed.

Furthermore, *shì ... de* bears the form of a nominalization structure (Li & Thompson 1981: 145), and nominal predication in general is more likely to describe an entity in categorizing terms (Wierzbicka 1986, Croft 1991: 101). Indeed, *shì ... de* is the canonical structure for certain kinds of adjectival predication, namely those that express relatively permanent, defining characteristics of an individual, such as gender and verity or genuineness. The (a) examples of (66) and (67) show that *nán* ‘male’ and *zhēn* ‘real/true’ are adjectives. The (b) examples show that they cannot occur in predicative position. Rather, these qualities must be expressed using *shì ... de*, as in the (c) examples.<sup>31</sup>

- (66) (a) yí gè nán (de) lǎoshī  
 yne CL male ASSOC teacher  
 ‘a male teacher’
- (b) \*tā (shì) nán  
 3SG be male  
 Intended: ‘He is male.’

[31] Li & Thompson (1981: 145) suggest that the *shì ... de* structure is employed when the adjective is ‘absolute’ or non-scalar. While it does seem to be the case that non-scalar adjectives cannot be used predicatively except in the *shì ... de* structure, it is not the case that only non-scalar adjectives may occur in this structure. For instance, it is completely acceptable to say that something *shì hóng de* ‘is red’.

- (c) tā shì nán de  
3SG be male DE  
'He is male.'
- (67) (a) yì kē zhēn (de) zuànshí  
one CL real ASSOC diamond  
'a real diamond'  
(b) \*zhè kē zuànshí (shì) zhēn  
this CL diamond be real  
Intended: 'This diamond is real.'  
(c) zhè kē zuànshí shì zhēn de  
this CL diamond be real DE  
'This diamond is real.'

In conclusion, then, *shì ... de* indicates a characterizing description of an object, and may occur with predicate phrases of varying category, and with varying interpretations. Although it may combine with COS verbs and RVCs, it does not seem right to treat *shì ... de* as a grammatical device specialized towards deriving result stative verbs or adjectives. This conclusion does not mean that Mandarin does not have deverbal adjectives altogether, though. I show in the next subsection that deverbal result state adjectives do exist, but unlike deadjectival COS verbs, and like the limited adjectival uses we saw of basic COS verbs, they are not systematically available.

### 4.3 *Deverbal adjectives*

At least two kinds of examples suggest that Mandarin may indeed allow deverbal adjectives. One kind involves names of dishes based on verbs of cooking, while the other involves verbs with incorporated instruments or agents. I discuss each kind in turn.

#### 4.3.1 *Verbs of cooking*

The examples in (68)–(69) provide names of dishes which incorporate the verbs describing how the dishes are cooked, a common naming strategy in Chinese cuisine. While the verb of cooking itself is sufficient in some cases, such as in (68), in other cases, such as in (69), it includes adverbial modification. As (70) shows, the verbs of cooking involved are transitive verbs.

- (68) (a) chǎo (de) ròu-piàn  
sauté ASSOC meat-slice  
'sautéed pork slices'  
(b) zhá (de) dòufu  
deep.fry ASSOC tofu  
'deep fried tofu'

- (69) (a) (qīng-)zhēng (de) yú  
 clear-steam ASSOC fish  
 ‘steamed fish’  
 (b) (bái-)zhǔ (de) dàn  
 white-cook ASSOC egg  
 ‘boiled egg’
- (70) chūshī chǎo-le bō-cài/zhēng-le yú  
 chef sauté-PERF spinach/steam-PERF fish  
 ‘The chef sautéed spinach/steamed fish.’

Clearly distinct from the COS verbs and RVCs discussed above is the ability of these verbal elements to modify nouns even in the absence of the associative particle *de*. Many of the names of dishes formed in this fashion are highly conventionalized, and some may be compounds, but some are productive, with a compositional meaning, and show characteristics of phrasal syntax. For instance, as is shown in (71) they license ellipsis of the head noun in a parallel structure (Paul 2005, as discussed in Section 2.3 above).

- (71) (a) wǒ bù chī zhā dòufu, (qīng-)zhēng de hái kěyǐ  
 ISG NEG eat deep.fry tofu clear-steam ASSOC still acceptable  
 ‘I don’t eat deep fried tofu, steamed (tofu) is OK.’  
 (b) jīntiān méi yǒu bái-zhǔ dàn, chǎo de nǐ yào ma?  
 today NEG have white-cook egg sauté ASSOC 2SG want QPRT  
 ‘There are no boiled eggs today. Do you want fried ones?’

Some of these modifiers allow an eventive interpretation, as indicated by negation with *méi* in (72a), and can occur with an agent phrase in the presence of *de*, as indicated in (72b).<sup>32</sup> Others, however, do not allow an eventive or agentive interpretation even with *de*. This is the case for *bái-zhǔ* ‘white-cook’ in (73).<sup>33</sup>

[32] Negation with *bù* is grammatical, but does not negate the occurrence of the cooking event, rather it means that the spinach is not intended for sautéing, hence the # sign in (72a).

[33] Two points of clarification for *bái-zhǔ* ‘white-cook’ may be needed. First, if *bái-zhǔ* ‘white-cook’ in nominal modifier position is an adjective, as I assume, it might suggest that (73a) would be grammatical with *bù* instead of *méi*, since *bù* combines with stative predicates, including adjectives. But this is not the case. I assume that this is because *bái-zhǔ* ‘white-cook’ is a characterizing adjective that occurs in predicative position only in the *shì* ... *de* construction, as in the case of *fāng* ‘square’ in (64a) (= (18b)), *nán* ‘male’ in (66) and *zhēn* ‘real’ in (67). In attributive position, these adjectives must in general be negated in the *shì* ... *de* environment using *bù*. Instead of *\*bù bái-zhǔ de dàn* (intended: ‘egg that is not white-cooked’) or *??/\*bù fāng de pánzi* (intended: ‘plate that is not square’), *bù shì bái-zhǔ de dàn* ‘egg that is not white-cooked’ and *bù shì fāng de pánzi* ‘plate that is not square’, must be used. Second, note that adverbial modification on the verb does not necessarily exclude eventive and agentive interpretations for verbs of cooking in nominal modifier position.

- (72) (a) yì pán méi/#bu chǎo \*(de) bōcài  
 one plate NEG sauté ASSOC spinach  
 ‘a plate of spinach that has not been sautéed’  
 (b) yì pán yóu mǔqīn chǎo \*(de) bōcài  
 one plate by mother sauté ASSOC spinach  
 ‘a plate of spinach sautéed by mother’
- (73) (a) \*yí gè méi bái-zhǔ de dàn  
 one CL NEG white-cook ASSOC egg  
 Intended: ‘an egg that has not been boiled’  
 (b) \*yí gè yóu mǔqīn bái-zhǔ de dàn  
 one CL by mother white-cook ASSOC egg  
 Intended: ‘an egg boiled by mother’

How should we interpret the contrast between (72) and (73)? Recall from Sections 4.1.2 and 4.1.3 above that RVCs such as *dǎ-pò* ‘hit-break’ in (51) and COS verbs such as *miè* ‘extinguish’ in (54) may only modify a nominal with *de* present, suggesting that in modifier position, they occur in a relative clause. This assumption is compatible with the eventive (and agentive, in the case of the RVC) properties they retain. Their behaviour is also consistent with the assumption that a deverbal adjective cannot be modified by eventive and agentive modifiers, reasonable enough given that adjectives are stative. These assumptions now suggest a reason for the contrast between (72) and (73). First of all, note that in (71b), the behaviour of *bái-zhǔ* ‘white-cook’ indicates that it modifies *dàn* ‘egg’ at a phrasal level, suggesting *bái-zhǔ dàn* ‘white-cooked egg, i.e. boiled egg’ is not a lexical compound. We thus cannot account for the ungrammaticality of (73) by, say, assuming *bái-zhǔ* ‘white-cooked’ to be part of a compound.

We can, however, account for the contrast between (72) and (73) by assuming that in (72) *chǎo* ‘sauté’ occurs in a relative clause, just like *dǎ-pò* ‘hit-break’ or *miè* ‘extinguish’ in (51) and (54), while in (73) *bái-zhǔ* ‘white-cooked’ is an adjective. Thus, the former but not the latter allows eventive and agentive modifiers. This step allows us to capture a three-way distinction. First, RVCs and COS verbs such as *dǎ-pò* ‘hit-break’ in (51) and *miè* ‘extinguish’ in (54) have eventive/agentive interpretations, but never modify a noun without *de*. This suggests that, as prenominal modifiers, they correspond only to relative clauses. Second, verbs of cooking such as *chǎo* ‘sauté’ in (72) show eventive/agentive properties in the presence of *de*, but they may also modify a noun without *de*. This suggests that as prenominal modifiers, they may constitute relative clauses (allowing eventive/agentive modifiers, but only with *de*), or they may be adjectives (allowing *de* to be absent). Third, prenominal modifiers such as *bái-zhǔ*

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The modified *qīng-zhēng* ‘clear-steam’ allows *méi* negation and the presence of an agent phrase.

‘white-cooked’ in (73b) do not show eventive/agentive properties, but may modify a noun without *de*. This suggests that such modifiers are not relative clauses, but are only adjectival. Overall, these distinctions point to the prenominal modifiers in (68)–(69) as having an adjectival representation available.

#### 4.3.2 Agentive and instrumental modifiers

Another set of potential deverbal adjectives consists of an eventive verb, with a preceding noun describing an instrument or agent of the event. Some examples are listed in (74)–(75). Like the modifiers based on verbs of cooking, these phrases may directly modify nouns without *de*, although *de* is always possible.

- (74) (a) zì-zhì (de) gāodiǎn  
 self-make ASSOC pastry  
 ‘homemade pastries’  
 (b) shǒu-huì (de) tú-àn  
 hand-draw ASSOC pattern  
 ‘handpainted patterns’  
 (c) kǒu-shù (de) lìshǐ  
 oral-recount ASSOC history  
 ‘history in the oral tradition’
- (75) (a) mǐn-bàn (de) tuántǐ  
 civilian-run ASSOC group  
 ‘civilian-run group’  
 (b) xiàn-zhuāng (de) shū  
 thread-assemble ASSOC book  
 stitch-bound book

As with verbs of cooking, these modifiers fall into two groups. The modifiers in (74) are similar to *chǎo* ‘sauté(ed)’, but distinct from both *dǎ-pò* ‘hit-break’ and *bái-zhǔ* ‘white-cooked’, in that they allow the presence of an agent-denoting phrase, as in (76).

- (76) (a) yì xiē yóu běn diàn zì-zhì \*(de) gāodiǎn  
 one some by this store self-make ASSOC pastry  
 ‘some pastries homemade by our store’  
 (b) yì xiē yóu yìrén shǒu-huì \*(de) tú-àn  
 one some by craftsman hand-draw ASSOC pattern  
 ‘some patterns handpainted by artisans’  
 (c) yí duàn yóu zhǎngzhě kǒu-shù \*(de) lìshǐ  
 one section by elder oral-recount ASSOC history  
 ‘a stretch of history orally recounted by the elders’

Going by the discussion of (73a, b) above, these modifiers would be of the *chǎo* ‘sauté’ category: They may occur in a relative clause, as in (76),

retaining the agentivity of the verb, or they may constitute adjectives, as in (74), allowed to modify the nominal with *de* absent.

However, as (77) shows, the modifiers in (75) do not allow agent phrases.

- (77) (a) \*yí gè yóu jū-mín mín-bàn (de) tuántǐ  
 one CL by reside-people civilian-establish ASSOC group  
 Intended: 'a civilian group established by residents'  
 (b) \*yì běn yóu dà chūbǎnshè xiàn-zhuāng (de) shū  
 one CL by big publisher thread-assemble ASSOC book  
 Intended: 'a book stitch-bound by a big publisher'

This behaviour corresponds to that of *bái-zhǔ* 'white-cooked', which also does not allow an agent phrase, seen in (73b) above. These modifiers – *bái-zhǔ* 'white-cooked', *mín-bàn* 'civilian-established', *xiàn-zhuāng* 'thread-assembled' – however, do modify nominals directly while also allowing an optional *de*.

These patterns suggest that the agent/instrument–verb sequences here can have adjective status. The examples in (76) suggest that those sequences in (74) may be ambiguous with a relative clause structure, while (77) suggests that those in (75) are only adjectival. The table in (78) sets out the different possibilities for interpreting the pre-nominal modifiers discussed above.

(78) *Deverbal adjectives and relative clause pre-nominal modifiers in Mandarin*

Type of verb	Example	Pre-nominal without <i>de</i> i.e. deverbal adjective	Eventive and/or agentive i.e. relative clause
Causative RVC	<i>dǎ-pò</i> 'break' (lit. 'hit-break')	no	yes
Intransitive COS	<i>miè</i> 'extinguish'	no	yes
Intransitive COS	<i>pò</i> 'break'	limited, i.e. 'on the fly'	yes
V of cooking	<i>chǎo</i> 'sauté'	yes	yes
V of creation	<i>zì-zhì</i> 'self-make'	yes	yes
V of information transmission	<i>kǒu-shù</i> 'orally recounted'	yes	yes
V of cooking	<i>bái-zhǔ</i> 'white-cooked'	yes	no
V of creation	<i>mín-bàn</i> 'civilian-established'	yes	no

Most noteworthy in (78) is the irregular relationship it reflects between verbs encoding some COS and their related adjectives. First, the relationship between verb classes and deverbal adjectives is non-uniform. In particular, as noted in Section 4.1.3 above, some intransitive COS verbs may form deverbal adjectives, but only in a limited fashion. Verbs of cooking and verbs of creation have deverbal adjectival counterparts, among which some, e.g. *bái-zhǔ* ‘white-cooked’ seem to be only adjectival. I have labelled *kǒu-shù* ‘orally-recounted’ as a verb of information transmission. In modifier position, *kǒu-shù* ‘orally-recounted’ may be an adjective or a relative clause. Unlike for verbs of cooking and verbs of creation, I have not been able to find a verb of information transmission that is only adjectival in modifier position. Second, note also the three-way distinction discussed above between verbs that have no deverbal adjective counterparts (RVCs, some intransitive COS verbs), those that do (most others in the table), and those that, in prenominal position, only correspond to deverbal adjectives (those in the last two rows of the table in (78) above). The varied situation presented by eventive verbs and their deverbal adjectival counterparts contrasts with the relatively regular COS verb alternations shown by adjectives (see (37) above). This suggests that a rule-based derivation may not be the right way to approach deverbal adjective formation in Mandarin. If so, how do these deverbal adjectives come about? I turn to this question directly below.

#### 4.4 *Modification with derived adjectives describes culturally-salient natural classes*

In this subsection, I discuss the factors that license deverbal adjectives in Mandarin. I show that deverbal adjectives are not productively available, and thus we should not assume them to be the result of a regular grammatical operation, or an indicator of systematic polysemy. Rather, I propose that deverbal adjectives may arise just in case the resulting class of entities described by the noun phrase with these adjectives as modifier can be understood as a culturally- or contextually-salient natural class.

##### 4.4.1 *Deverbal adjectives are not productive*

Unlike deadjectival COS verbs, which are quite regular, the deverbal adjectives discussed above are relatively conventionalized and domain-specific. For instance, although any food item described with a particular verb of cooking has to have undergone the process named, simply undergoing that process does not necessarily qualify the food to be named with the relevant modifier. Many dishes require intermediate steps of processing some ingredient in some way before that ingredient is combined with the rest of the ingredients to form the dish. Thus, for a certain dish, pork slices may be first

sautéed briefly, then taken off the heat while something else is being prepared. This intermediate step does not necessarily qualify the pre-sautéed pork slices as *chǎo ròu-piàn* ‘sautéed pork slices’.

The flexibility of verbs of cooking is also domain-specific: There seems to be no correspondingly varied choice of modifiers for nouns naming drinks. For instance, there is no obvious way to express James Bond’s famous ‘shaken not stirred’ distinction via prenominal modification without *de*.

Similarly, adjectives such as *mín-bàn* ‘civilian-established’ are restricted to the contrast between government and civilian as agents of an event. Analogous adjectives include *guān-bàn* ‘official-established’ and *mín-yíng* ‘civilian-administered’. There are, however, no corresponding adjectives for other social groups in agentive capacity, for instance, there is no adjectival *\*(xué)shēng-bàn* ‘student-established’ or *\*(jiā)zhǎng-bàn* ‘parent-established’. That is, in nominal modifier position, these phrases must be followed by *de*.

These observations demonstrate the non-productive nature of the deverbal adjectives discussed, suggesting that they are not systematically available.

#### 4.4.2 *The conceptual-pragmatic basis of deverbal adjectives*

If the deverbal adjectives discussed above are not derived by rule or systematic polysemies, how do they come about? I suggest that these deverbal adjectives have a conceptual-pragmatic basis, specifically, that the modified NP containing these adjectives describes a culturally- or contextually-salient class of entities. Several points support this interpretation.

First, as seen in (79), these deverbal adjectives are attributive and do not occur in predicative position, except in the *shì ... de* construction, as in (80).<sup>34</sup>

- (79) (a) \*zhè pán bōcài chǎo  
           this plate spinach sauté  
           Intended: ‘This plate of spinach is sautéed.’  
       (b) \*zhè duàn lìshǐ kǒu shù  
           this CL history oral recount  
           Intended: ‘This history is in the oral tradition.’
- (80) (a) zhè pán bōcài shì chǎo de  
           this PL spinach be sauté DE  
           ‘This spinach is sautéed.’

[34] The examples in (79) are grammatical if interpreted as imperatives with a fronted object nominal (e.g. ‘This plate of spinach, sauté it!’) or as pronouncements of what to do with some item (e.g. ‘This plate of spinach is to be sautéed’). These interpretations are not relevant to the discussion.

- (b) zhè duàn lìshǐ shì kǒu shù de  
 this CL history be oral recount DE  
 ‘This history is in the oral tradition.’

As we saw in Section 4.2 above, these properties are manifested by other adjectives, such as *nán* ‘male’ and *zhēn* ‘real’, which may be understood to have a characterizing function. It seems plausible that words that are used to characterize at least certain kinds of objects, when combined with the relevant nominal, would describe a culturally-salient class of entities.

Second, the ability to occur prenominal in the absence of *de* – the reason these words were identified as adjectives – is itself indicative of a characterizing function. As noted in Section 2.1 above, even basic property concept adjectives such as *bái* ‘white’ and *gāo* ‘tall/high’ do not modify all nominals with equal felicity in the absence of *de* (Zhu 1956/1980). The examples in (15) above, repeated here, illustrate one such case.

- (15) (a) *bái* (de) *zhǐ*  
 white ASSOC paper  
 ‘white paper’ (Zhu 1980: 7)
- (b) *bái* #(de) *shǒu*  
 white ASSOC hand  
 ‘white hand’ (Zhu 1980: 10)

Paul (2006: 306) suggests that a pre-nominal modifier in the absence of the associative particle *de* ‘is possible provided the resulting NP provides a natural, plausible classification, with the modifier presented as a defining property’ (see also Li & Thompson 1981: 119). Paul draws an analogy between nominal modification without *de* in Mandarin with prenominal adjectival modification in English, which shows ‘similar semantico-pragmatically motivated gaps’, discussed at length in Bolinger (1967). Bolinger (1967) argues that in English, adjectives in attributive position tend to have a ‘characterizing’ function. For instance, the same adjective in attributive and predicative position may have different effects on meaning, as in the contrast between the English expressions *the visible stars* (stars that are inherently visible, being of high magnitude) and *the stars visible* (on a cloudy night). The characterizing function similarly distinguishes between the availability of present participle compounds: *a home-loving girl* as opposed to the lack of *a mistake-erasing secretary* or *a husband-waking wife*, which ‘must await the day when we have some interest in characterizing secretaries as mistake-erasing or wives as husband-waking’ (Bolinger 1967: 7). The availability of prenominal adjectives without *de* in Mandarin appears to be subject to a similar condition.

The deverbal adjectives discussed in Section 4.3 above, based on verbs of cooking and verbs with agent and instrument modifiers, are easily compatible with the cultural salience rubric, given the importance of cuisine in

Chinese culture. Many of the deverbal adjectives discussed above also describe methods of production or creation, one way artifacts may be classified (Hilpinen 2011).

Cultural salience is not the only factor licensing deverbal adjectives. Contextual factors may allow a class of objects to at least temporarily take on salience. This is presumably what is at work in the felicity conditions of *huài* ‘break down’ in the *shì ... de* environment in (65) discussed in Section 4.2 above. COS verbs often describe changes resulting in decay, disrepair, and malfunction, perhaps not usually the kinds of categories objects are classified by. This may be why it is more difficult to find them in descriptions with a characterizing function such as the *shì ... de* construction and in prenominal modifier position without *de*. But they are found in contexts where these categories are salient, e.g. for an auto mechanic, broken cars are of occupational significance. Indeed, *huài* ‘break down’ would be felicitous in prenominal position without *de*, e.g. *huài chē* ‘broken down car’ in the same context as it would be felicitous with *shì ... de*, namely when the category of objects being described is salient in some way, e.g. broken down cars being pointed out to or by an auto mechanic.<sup>35</sup>

A further example in this vein is provided by the intransitive COS verb *duàn* ‘to break/snap apart’ in (81a).

- (81) (a) *diàn-xiàn duàn-le*  
 electric-cable snap-PERF  
 ‘The electric cables snapped.’
- (b) *tā gěi yì tuán duàn (de) diàn-xiàn chán-zhù-le*  
 3SG give one mass snapped ASSOC electric-cable tangle-stop-PERF  
 ‘She was tangled in a mess of severed electric cables.’ (PKU)
- (c) *duàn (de) xiàn shì yīn de fúhào*  
 broken ASSOC line be *yīn* ASSOC symbol  
 ‘A broken line is the symbol for *yīn*.’ (PKU)
- (d) *huàn-zhě kěnéng shì xuè-guǎn duàn-le*  
 sickened-one possible be blood-vessel snap-PERF  
 ‘It could be that the patient’s blood vessel had snapped.’ (PKU)
- (e) *\*yì gēn duàn xuè-guǎn*  
 one CL snap blood-vessel  
 Intended: ‘a snapped blood vessel’

[35] This is the case in (65c) above. In fact, among the 10 instances of *huài chē* ‘broken down car’ I found in the PKU corpus, four were in contexts relating to car repair and one was in a movie studio context where stunts were being performed. That is, half of the examples – already few in number – occur in contexts where broken down cars would be a salient category. Two others were either in texts translated from English, or at least about an English-speaking environment, where *huài chē* ‘broken down car’ could be understood as reflecting properties of English. This pattern is consistent with the assumption that the COS verb *huài* ‘break down’ has only a limited adjectival use that is more likely formed ‘on the fly’.

This word may occur preminally with optional *de*, suggesting that it has an adjectival representation, as in (81b, c), but these uses are limited when compared with its verbal use.<sup>36</sup> For instance, (81b) is in the context of a wartime novel, describing what happens during a family's flight from a city in which an air raid had recently occurred. In such a context, snapped cables are likely to be a salient category. Another putative adjectival use is in a specialized context such as (81c), which describes the use of a broken line to represent the concept of *yīn* in Taoist cosmology.<sup>37</sup> As (81d, e) suggest, however, *duàn* 'snap/break apart' is less restricted as a COS verb than as a result state adjective. I could find no instances of *duàn xuèguǎn* 'snapped blood vessel', which would indicate adjectival *duàn* 'snapped', either in the PKU corpus or through a Google search. In contrast, in the PKU corpus, I found five instances of *xuèguǎn duàn-le* 'blood vessel snapped', where *duàn* 'snap' would be verbal, and numerous further such instances through a Google search.

The conventionalized and context-dependent qualities of deverbal adjectives form a clear contrast with the regularity of deadjectival COS verbs, suggesting that some of them, e.g. those based on verbs of cooking, are simply listed in the lexicon, while some are probably formed 'on the fly', e.g. *duàn* 'to break/snap apart', hence the apparently random discrimination between, say, blood vessels and electric wiring.

#### 4.5 Remaining questions

Before concluding, I turn to two issues that I have not addressed so far. These are, first, the lack of RVC-derived adjectives, and second, the status of the suffix *-zhe* as stativizing morphology.

##### 4.5.1 Why no RVC-derived adjectives?

I have argued above that the deverbal adjectives discussed in this paper are not systematically available, and those that are available are either separately listed in the lexicon, or derived 'on the fly'. This provides a plausible explanation for the rarity of deverbal adjectives based on COS verbs, and the domain-specificity of those based on certain transitive verbs, which are somewhat more numerous. One puzzle remains, however. This is the seemingly categorical inability of RVCs to show adjectival behaviour, i.e. to occur in attributive position of a noun phrase with *de*. I have no account of this

[36] I have inserted the parenthesized *de* in (81b, c) to illustrate that it is allowed there. The original examples do not contain *de*.

[37] *Yīn* is, of course, opposed to *yáng*, represented by a solid line. Again, as with the examples in (60), this is a derived stative use of *duàn* 'snap', describing a physical characteristic of a line as non-continuous, rather than a line that has (been) snapped.

asymmetry, but in this subsection, I speculate on a possible reason for it. I believe the crux of the matter lies in the lack of overt morphology in Mandarin specialized to signaling the relevant grammatical operations that verbs (and adjectives) participate in.

Let us first consider the simpler case of intransitive COS verbs. Drawing on Kratzer (2000), I assume a stativizing function (82) – possibly associated with a zero morpheme – that may apply to intransitive COS verbs, as shown in (83).<sup>38</sup> I assume that the operation, being non-overt, is costly, and that it is either conventionalized for particular verbs or applied when the context allows the kind of interpretation discussed above.

(82) Stativizer:  $\lambda R \lambda x \lambda s \exists e R(x)(s)(e)$

(83) (a) *pò* ‘to break (intransitive)’:  $\lambda x \lambda s \lambda e [BECOME(s)(e) \wedge \text{not-whole}'(x)(s)]$

(b) Stativized *pò* ‘broken’:

$\lambda R \lambda x \lambda s \lambda e \exists e R(x)(s)(e)(\lambda x \lambda s \lambda e [BECOME(s)(e) \wedge \text{not-whole}'(x)(s)])$   
 $= \lambda x \lambda s \exists e [BECOME(s)(e) \wedge \text{not-whole}'(x)(s)]$

One way RVCs may be prevented from giving rise to a derived stative is simply to assume that they are of the wrong type. The stativizing function selects for a function of type  $\langle e, \langle s, \langle v, t \rangle \rangle \rangle$ , but an RVC such as *cā-gān* ‘wipe dry’, when detransitivized, as in (84), is of the type  $\langle e, \langle s \langle v, \langle v, t \rangle \rangle \rangle \rangle$ .

(84) Passive/detransitivized *cā-gān* ‘be wiped-dry’:

$\lambda y \lambda s \lambda e' \lambda e \exists x [\text{wipe}'(x, y)(e') \wedge \text{dry}'(y)(s) \wedge BECOME(s)(e) \wedge CAUSE(e', e)]$

The distinction may seem trivial, but a more intuitive way of understanding it is that a phonologically non-overt grammatical operation that involves existential binding over events (as opposed to existential closure at the clause level) may not affect more than one event argument.

What of deriving statives from verbs of cooking and the other verbs discussed above? There are different ways to approach these, but one important

[38] Taking the operations discussed so far as being associated with zero morphemes may be useful in connection with another, related point. I have assumed that COS interpretations associated with property concept words really come from deadjectival verbs. Importantly, property concept words in prenominal modification contexts do not have COS interpretations: *dà* (*dě*) *yǎngxàng* ‘big image’ only means ‘an image that is big’, not ‘an image that has been enlarged’. So far in my analysis, there is nothing to prevent COS verb *dà* ‘become big(ger)’ from undergoing a stativizing operation. Conceptually, there should be nothing wrong with this step, as English deverbal adjectives such as *enlarged* and *darkened* suggest. Intuitively, the inflexibility of Mandarin property concept words here seems to be based on the lack of overt morphology: If deadjectival COS verbs allow a stativizing operation, the same form would show a three-way ambiguity between property concept, COS, and result state. One way of preventing this situation would be to ‘track’ the changes a morpheme has already undergone, say, by a zero morpheme, and appeal to a condition against the attachment of more than one zero morpheme. Thus, the COS verb *dà* ‘become big(ger)’, for instance, would already have a complex morphological structure  $dà-\emptyset_{BECOME}$ . A further zero morpheme deriving an adjective from this derived COS verb would be prohibited.

point is that these verbs do not specify change of state in the same way as RVCs do. Although verbs of cooking such as *chǎo* ‘sauté’ allow an inference that the theme of the event is cooked to some extent, I believe this inference is not specified in the event structure of the verb.<sup>39</sup> This distinction shows up in negation contexts with *méi*, such as in (85).

- (85) (a) wǎn méi cā-gān  
 bowl NEG wipe-dry  
 ‘The bowl wasn’t wiped dry.’  
 (i.e. ‘The bowl was wiped, but didn’t get dry.’  
 Or: ‘The bowl wasn’t wiped.’)
- (b) cài méi chǎo  
 vegetable NEG sauté  
 ‘The vegetables were not sautéed.’  
 (i.e. ‘No sautéing of the vegetables took place.’  
 Not: ‘The vegetables were sautéed but not cooked.’)

RVCs under *méi* have two interpretations: (85a) may mean that there was wiping but the bowl did not become dry (the favoured interpretation), or that no wiping occurred. The example in (85b), with *chǎo* ‘sauté’, can only mean that no sautéing event took place, not that there was sautéing but the vegetables did not get cooked.

A proper representation that captures these generalizations must await further work, but for current purposes, we may distinguish *chǎo* ‘sauté’ (and other verbs of cooking) from ‘true’ COS verbs by representing them as activity verbs, as in (86a).

- (86) (a) *chǎo* ‘sauté’:  $\lambda y \lambda x \lambda e \text{ sauté}'(x, y)(e)$   
 (b) stative *chǎo* ‘sautéed’:  $\lambda y \lambda t \exists e \exists x [\text{sauté}'(x, y)(e) \wedge \tau(e) < t]$

To accommodate the associated COS inference, we could further assume a meaning postulate stating that, for any event of sautéing, there is a corresponding change of the theme to some degree of being cooked. A stativized meaning for such a verb, then, could perhaps be better captured via some version of Kratzer’s (2000) ‘resultant state’ meaning, as a function from an individual to the set of times that are preceded by (the runtime  $\tau(e)$  of) an event  $e$  in which this individual undergoes sautéing,

[39] See Chief (2007), Koenig & Chief (2008) for how the distinction between RVCs and monomorphemic COS verbs such as verbs of cooking may be captured by appealing to their scalar properties. Koenig & Chief (2008) classify verbs of cooking as describing ‘induced normative gradable changes’. They propose (page 256) that in Mandarin, sentences with such verbs entail that ‘a normative gradable change occurred with degree  $d_0 < d \leq d_N$ ’, where  $d_N$  is a ‘designated’ degree or a threshold on some scale. In the case of verbs of cooking, this threshold is that of what would count as being ‘cooked’ (which may be culturally defined). According to Koenig & Chief (2008), such verbs in Mandarin entail some change in the patient (becoming more cooked), although not necessarily to the threshold that would count as being ‘cooked’.

as in (86b).<sup>40</sup> Again, I would assume such an operation to be costly, given its non-overt nature, and to be conventionalized for particular verbs, or to apply only in particular contexts.

#### 4.5.2 *Stativizing morphology?*

On a related but more general note: Why is there an asymmetry between deadjectival verbs and deverbal adjectives? I speculate again that the lack of deverbal result state adjectives is due to the lack of overt verbal morphology such as a participial morpheme that is specialized for forming result state predicates from verbs encoding change, since this could mean that there is no consistent source of stative predicates for adjective formation. Such a hypothesis would suggest that deadjectival verb formation, which is also not overtly indicated, is somehow less ‘costly’ than a stativizing operation, perhaps because it does not involve existential binding over an event.

The durative particle *-zhe* presents a further potential problem for the notion that deverbal adjective formation in Mandarin is somehow limited by the lack of overt morphology. Jaxontov (1988) proposes, for instance, that *-zhe* shows stativizing properties. This observation is based on the ability of *-zhe* to combine with verbs of putting such as *fàng* ‘put’, *bái* ‘place’ and *guà* ‘hang’, illustrated in (87). Since *V-zhe* may describe situations such as that in (87b) in which no actual causing action has taken place to bring about a change of location of the theme, this suggests *V-zhe* is some kind of a derived stative verb.

- (87) (a) *qiáng-shàng guà-zhe yì fú huà*  
 wall-upon hang-DUR one CL painting  
 ‘On the wall hung a painting.’  
 (b) *tiān-shàng guà-zhe jǐ kē xīng*  
 sky-upon hang-DUR few CL stars  
 ‘In the sky hung a few stars.’

While this proposal may be correct for verbs of putting, the morpheme *-zhe* cannot be considered a particle for deriving result states in general. It may attach to a variety of verbs, including activity verbs, as in (88a), and stative verbs, as in (88b–d), where the interpretation it yields is clearly that the event or state described is ongoing at the reference time of the clause. With the latter it is often associated with locative inversion, as shown in (88c) (Pan 1996), though this is not necessarily the case, see (88d). For further discussion of *-zhe*, see Yeh (1993), Wu & Kuo (2003), Wu (2007).

[40] The representation in (86b) should be understood as an intermediate representation that is converted to an attributive adjective, since there is no predicative stative version of *chào* ‘sauté’ and verbs like it.

- (88) (a) *tā kàn-zhe wǒ ...*  
 3SG look-DUR ISG  
 ‘(S)he looked at me ...’
- (b) *Qīngzàng gāoyuán-shang yǒu-zhe bái-xuě-ǎiǎi*  
 Qinghai-Tibet plateau have-DUR white-snow-snowy  
*de xuě fēng*  
 ASSOC SNOW PEAK  
 ‘On the Qinghai-Tibetan plateau there are white snow-capped mountains.’ (PKU)
- (c) *zhè-lǐ zhù-zhe 2.8 wàn Zhèjiāng rén*  
 here live-DUR 28,000 Zhejiang people  
 ‘Here live 28,000 people from Zhejiang province.’ (PKU)
- (d) *tā ... zài gōng-lǐ zhù-zhe*  
 3SG be.at palace-within live-DUR  
 ‘She lived in the palace.’ (PKU)

That *-zhe* can combine with originally stative predicates suggests that it should not simply be considered stativizing morphology. That it can combine with activity predicates that do not encode a change of state indicates also that *-zhe* has functions other than creating a result state predicate. In addition, while *-zhe* may combine with verbs of change of location such as *guà* ‘hang’ in (87) above, it may not combine with other COS verbs, regardless of their valence, as (89a) shows.

- (89) (a) *\*bēizi (dǎ-)pò-zhe*  
 cup hit-break-DUR  
 Intended: ‘The cup is broken.’
- (b) *guà-zhe \*(de) yīfu*  
 hang-DUR ASSOC clothes  
 ‘hanging clothes’

This shows that whatever its stativizing properties, it does not apply to all COS predicates. Finally, *V-zhe* never shows adjective-like behaviour (89b). It cannot modify nominals without *de*, further suggesting that even if *-zhe* does derive result state predicates from verbs of caused change of location, they remain verbs and are not converted into adjectives. Therefore, at the very least, we can conclude that *V-zhe* is not a source for a regular derivation of deverbal adjectives. It might eventually turn out upon investigation that the *-zhe* with verbs of putting is distinct from the durative *-zhe* in (88), but this is a question for another paper, and I do not discuss it further here.

Summing up this section briefly, adjectives cannot be derived systematically from COS verbs. Deverbal adjectives based on COS verbs do exist, but they are better considered as listed separately or formed ‘on the fly’ rather

than being systematically available. These deverbal adjectives are allowed if the modified NP they occur in describes a culturally- or contextually-salient category of objects.

##### 5. LOOKING FURTHER: THE FUNDAMENTAL NATURE OF CHANGE OF STATE PREDICATION

This work has shown that morphological paradigms of adjectives and verbs expressing related state and COS meanings in Mandarin, as in the other languages noted above in the Introduction, fall into two categories. In one, the adjective is basic to the paradigm; in the other, the COS verb is basic. In previous work these derivational relationships have been contrasted in terms of whether the stative word in the paradigm encodes a property concept or a result state, indicated by whether the stative word or a (typically causative) COS verb is the morphologically simplest member of the paradigm. Analogous paradigms in Mandarin are less directly observable because of the lack of relevant morphological cues. They are also manifested somewhat differently because of the lack of monomorphemic verbs describing caused COS, so that the paradigms seem to be missing a member.

But these 'pared-down' paradigms in Mandarin, limited to intransitive predicates, throw into relief the conceptual basis underlying the different derivational directions. Dixon (1982, 1991) identifies the following conceptual categories expressed by adjectives in English:

- (i) DIMENSION (e.g. *big, short*)
- (ii) PHYSICAL PROPERTY (e.g. *hard, cold, sweet*)
- (iii) SPEED (e.g. *fast, slow*)
- (iv) AGE (e.g. *new, young*)
- (v) COLOUR (e.g. *black, white*)
- (vi) VALUE (e.g. *good, bad*)
- (vii) DIFFICULTY (e.g. *easy, tough*)
- (viii) VOLITION (e.g. *deliberate, accidental*)
- (ix) QUALIFICATION, spanning subtypes such as DEFINITE (e.g. *obvious, true*) and LIKELY (e.g. *likely, certain*)
- (x) HUMAN PROPENSITY (e.g. *kind, wicked*)
- (xi) SIMILARITY (e.g. *(un)like, different (from)*)

Of these, AGE, DIMENSION, VALUE, and COLOUR are most likely to be expressed by adjectives (rather than nouns or verbs) across languages (Dixon 1982: 46, summarized in Schaefer & Egbokhare 1993: 160. See also Wetzer 1992: 242; 1996: 7–12, albeit with a caveat regarding COLOUR also noted by Croft 1991: 136).<sup>41</sup>

[41] Both Wetzer (1992, 1996) and Schaefer & Egbokhare (1993) provide a more nuanced view of this generalization that is nonetheless congruent with its validity in a broad sense. Wetzer (1992, 1996), based on a sample of more than 100 languages, takes into account the

In Mandarin, the words that I have argued are adjectives – *hóng* ‘red’, *bái* ‘white’, *kuān* ‘wide’, *gāo* ‘tall/high’ and *lǎo* ‘old’ – fit easily into these categories. I have shown that these are basic adjectives from which COS verbs of the same form may be derived. In addition, the Mandarin facts highlight an equally basic group of intransitive COS verbs, on which de-verbal adjectives may be based, though not arising from a systematic derivational process. These generalizations were schematized in (13), repeated here.

(13) *No systematically derived result state adjectives (Mandarin)*

	State Adj	COS Verb	Caused COS RVC
Property concept state-based		—————→	( ← — — — — → )
(Caused) COS-based		← — — — —	— — — — —

Dixon (1982) notes the greater likelihood of certain meanings, expressed adjectivally in English, to be lexicalized as verbs in other languages. He provides examples from Alambalak, attributed to Les Bruce, listed here in (90), where he observes an ‘opposition between an unmarked state (shown by an adjective) and a marked action (shown by a verb) which alters the original state’ (page 52).

- (90) (a) Adjectives: *nfri* ‘unripe’, *wafkha* ‘healthy’, *nfri* ‘alive, new’, *briöh* ‘empty’  
 (b) Verbs: *huk(kföt)* ‘to ripen’, *dböhna(kföt)* ‘to be sick’, *noh(kföt)* or *gu(kföt)* ‘to die’, *frkih(kföt)* ‘to be full’

The words that I have argued are basic COS verbs in Mandarin include *bìng* ‘to fall sick’, *sǐ* ‘to die’, *zuì* ‘to get drunk’, *huài* ‘to break down’, *liè* ‘to crack’, *pò* ‘to break’, *duàn* ‘to snap’ and *huà* ‘to melt’. Taken together with the Alambalak examples, what these suggest is that, just as concepts pertaining to dimension, age, colour, and value are the natural province of adjectives, there are equally concepts such as malfunction, decay, deterioration, sickness and becoming non-sober, and also quite possibly growth, blooming, blossoming, ripening, melting, freezing, etc. – but crucially not the states of being new, fresh, or unripe – that are the natural province of COS verbs. Many of these notions correspond to what

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similarities in encoding that adjectives may show to nouns or verbs. Schaefer & Egbokhare’s (1993) discussion of Emai considers the role of nouns and verbs in the encoding of property concepts within a wider context of language change that supports grouping together the categories AGE, VALUE and COLOUR in terms of their means of expression.

Levin & Rappaport Hovav (1995: 97) propose are ‘internally caused changes of state’. In the case of verbs such as *pò* ‘to break’ and *duàn* ‘snap’, this notion of change is clearly difficult to separate from the notion of causativity, but languages such as Mandarin, where the element of causation is quite neatly filtered out from the expression of change, suggest that there is a fundamentality to change of state that cannot be reduced either to being built up from a state, or being extricated from a causative. This further suggests, then, that COS, independent of causatives and states, is worthy and perhaps needful of greater attention in future research.

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