Agents, causers, results, and contentfulness in Mandarin expressions of caused change

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Recent Approaches to (Non-)Agentivity in Natural Language

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1   Introduction

— A perennial question in the study of verb meaning is how complex or contentful the meaning of a verb can be.

— Complexity in what terms?

— An object is *grue* ... just in case it is green up to a given time t, and blue thereafter. ((Goodman (1955), cited in Dowty (1979).

— *weave*: "to make (cloth) by interlacing the threads of the weft (the horizontal threads) and the warp (the lengthwise threads) on a loom"

— But complex activities such as weaving pattern can grammatically in the same way as relatively simple ones such as scrubbing (also sweeping, digging), and these in turn pattern quite differently from verbs such as *break*.

(1)   a.   Rumpelstiltskin wove (cloth) all day.

   b.   Cinderella scrubbed (floors) all day.

   c.   Tom Sawyer broke *(windows) all day.

   d.   *The cloth wove.

   e.   bad The floor scrubbed.

   f.   The window broke.

— Complexity in encyclopaedic content is usually distinguished from complexity in terms of grammatically-relevant components of meaning: semantic structure vs semantic content (Grimshaw 2005) (see also Pinker 1989, Mohanan and Mohanan 1999).

—- One important semantic distinction with grammatically-relevant effects is whether a verb describes the manner of carrying out some action (e.g. *scrub*), or a change that some entity undergoes (e.g. *break*) (Fillmore 1970).

— The manner-result distinction has had far-reaching consequences in lexical semantic research, and its effects have also been felt in the investigation of the complexity of verb meaning.

— An important hypothesis regarding verb meaning complexity: Manner-result complementarity (MRC)

> (2) MANNER-RESULT COMPLEMENTARITY: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one.
> (Levin and Rappaport Hovav 1991, 2006, Rappaport Hovav and Levin 2010 etc.)

— **This paper** considers the complexity/contentfulness of verbs from the perspective of Mandarin Chinese. These are most typically expressed by means of a resultative verb compound (RVC), which specify both a manner and a result component (3). To a lesser extent, monomorphemic verbs of caused change are also possible (4). These options raise implications for MRC.

> (3) Sānmáo **cì-pò**-le   qìqiú
> Sanmao prick-break-PERF balloon
> Sanmao pricked the balloon, bursting it.[1]

> (4) fúwùyuán **rè**-le   shèngcài
> server   hot-PERF leftover
> The server heated the leftovers.

— I propose that the major (RVC) and minor (monomoprhemic verb) patterns in the encoding of events of caused change in Mandarin reflect a prioritization of maximizing content: forms that can pack more grammatically-relevant components of meaning are preferred over other forms.

— I show also that an agentivity restriction on monomorphemic verbs of caused change in Mandarin can be attributed to this principle of content maximization.

Overview

Section 2: Compounds and monomorphemic verbs in the encoding of events of caused change in Mandarin

Section 3: Content maximization as the main factor for the overall patterns of how events of caused change are expressed in Mandarin

Section 4: Conclusion and discussion

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[1] Abbreviations used: 1,2,3 = 1st/2nd/3rd person; ASSOC = associative marker; NEG = negation; PERF = perfective; PL = plural; PERT = sentence-final particle

2 Mandarin expressions of events of caused change

2.1 Resultative verb compounds

— In Mandarin, events of caused change are predominantly expressed via resultative verb compounds (RVCs) (Li and Thompson 1981: 55-67) (5a), which are at least bimorphemic (more morphemes may be involved), and normally composed of a verb describing a causing action (e.g. *cì* 'prick', follwed by one describing some change, typically a change of state (COS), e.g. *pò* 'break'.

– In general, the COS verb can only be intransitive, as in (5b): there is no productive causative alternation that yields structures suc has (5c).

(5)   a.   Sānmáo **cì-pò**-le   qìqiú
             Sanmao prick-break-PERF balloon

             Sanmao pricked the balloon, bursting it. (= (3))

      b.   qìqiú   **pò**   le
             balloon break PERF

             The balloon burst

      c.   *Sānmáo **pò**-le   qìqiú
             Sanmao break-PERF balloon

             Intended: as in (a)

— But RVCs are not the only option for expressing events of caused change: Monomorphemic verbs of caused change are also available.

2.2 Monomorphemic verbs of caused change

2.2.1 Caused change of location and caused motion

— Events of caused change of location are most naturally expressed using monomorphemic verbs that select for a locative complement, e.g. *fàng* 'put' (6), *bǎi* 'place', *guà* 'hang', *sāi* 'stuff'. Included in this class are verbs of caused motion, e.g. *rēng* 'throw', *pāo* 'toss'.

(6)   a.   Sānmáo **fàng/rēng-le** yì   zhī bǐ **zài**   **zhuōzi-shàng**
             Sanmao put/toss   one CL pen be.at table-upon

             Sanmao put/tossed a pen on the table.

b. Sānmáo **zài zhuōzi-shàng fàng-/rēng-le** yì zhı bǐ

Sanmao be.at table-upon put/toss-PERF one CL pen

Sanmao put/tossed a pen on the table.

2.2.2 Caused change of state

— Monomorphemic caused COS verbs are few, but do exist, e.g. *rè* 'to heat' (7), *kāi* 'open' (8), *qīng* 'clear', *dòng* 'freeze', but perhaps not many more.

(7) fúwùyuán rè-le shèngcài

server hot-PERF leftover

The server heated the leftovers. (= (4))

(8) fúwùyuán kāi-le mén

server open-PERF door

The server opened the door.

2.3 Monomorphemic verbs of caused change are (mostly) agentive

— An interesting point regarding monomorphemic verbs of caused change is that, except for a very small number of exceptions (to be discussed below), they are restricted to be agentive.

— This restriction applies to both verbs of caused change of location and caused motion (caused CLM), and to caused COS verbs.

— Monomorphemic caused CLM verbs such as *fàng* 'throw', *rēng* 'toss' etc. are incompatible with abstract causers (9)-(10), and with natural force causers (11).

(9) #zhè jiàn shì huì fàng tāmen zài gāngà de chǔjìng

this CL matter will put 3PL be.at awkward ASSOC situation

Intended: This matter will put them in an awkard situation.[2]

(10) #dà fēng zài hé-lı̌ rēng-le xǔduō luò yè

big wind be.at river-within toss-PERF many fall leaves

Intended: The strong wind tossed many fallen leaves into the river.

(11) #mìngyùn xiàng tāmen rēng-le gè zhǒng tiáozhàn

fate towards them toss-PERF each kind challenge

Intended: Fate tossed all kinds of challenges at them.

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[2]This example has been modified very slightly from the original version of the handout, which used a corresponding BA-sentence to demonstrate the point. (TSW: May 24 2019)

(12) a. fúwùyuán qīng-le wǎnpán
server clear dishes
The server cleared the dishes.

b. #dà fēng qīng-le tiānkōng
big wind clear-PERF sky
Intended: Strong winds cleared the sky.

(13) #tàiyang rè-le tǔdì
sun hot-PERF earth
Intended: The sun heated the earth.

(14) #yí zhèn fēng kāi-le mén
one gust wind open-PERF door
Intended: A gust of wind opened the door.

— Unlike the monomorphemic verbs discussed above, verb compounds freely accept subject nominals that describe natural elements and other kinds of non-volitional causers:

(15) tàiyang **zhào-rè-le** tǔdì
sun shine-hot-PERF earth
The sun heated the earth.

(16) zhè cì huìyì **huà-jiě-le** tāmen de máodùn
this time meeting melt-resolve-PERF 3PL ASSOC conflict
This meeting resolved their conflict.

3 Content maximization in Mandarin expressions of caused change

— I propose that the main factor behind the encoding patterns described above in Mandarin expressions of caused change is content maximization – the preference for forms that encode more grammatically-relevant components of meaning than those that do not.

3.1 RVCs as a content maximization strategy

— The bimorphemic or polymorphemic form of Mandarin RVCs provides a strategy around manner-result complementarity (MRC).

— Mandarin RVCs are generally considered by Chinese linguistics researchers to be lexical compounds (Li 1990, Cheng and Huang 1996). In this sense, they can be considered to constitute a single verb, but encoding both manner and result.

(5) a. Sānmáo **cì-pò**-le   qìqiú
    Sanmao prick-break-PERF balloon
    Sanmao pricked the balloon, bursting it.

— But at the level of the morpheme, MRC holds. For instance, in (7), it is not known whether the server heated the leftovers by cooking over a fire, or in a microwave, or in an oven, etc. Similarly, (17) shows that the mere act of cooking food does not entail that the food becomes cooked.

(7) fúwùyuán rè-le   shèngcài
    server   hot-PERF leftover
    The server heated the leftovers.

(17) chúshī zhǔ-le   miàntiáo dàn méi zhǔ-shú
     chef   cook-PERF noodle   but NEG cook-cooked
     The chef cooked the noodles but they did not become cooked.

— Mandarin RVCs are part of a linguistic system in which compounding is prevalent.

— The productivity of such a polymorphemic structure allows for both manner and result components to be expressed in a description of an event of caused change.

— But RVCs in Mandarin are not simply available: they are widely used, and in many cases, the only option for describing certain events or situations that may be considered very basic in our experience.

(18) *kàn-jiàn*/dào "see *lit.* look-see/arrive"
     tīng-jiàn/dào "hear *lit.* listen-see/arrive"
     wén-dào "smell *lit.* sniff-arrive"

— The assumption that content maximization is prioritized in the grammar of Mandarin speakers can account for the prevalence of RVCs in the language.

— Given their polymorphemic nature, RVCs inherently provide a structural option for encoding both manner and result components of an event of caused change.

— Given manner-result complementarity, RVCs will inherently be more contentful than a monomorphemic structure.

— Assuming the priority of content maximization, RVCs will thereby be predicted to be the preferred form for encoding caused change in Mandarin.

— But noted above, RVCs are not the only option for encoding caused change events. Monomorprhemic verbs of caused change do exist.

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— This suggests other factors, and not just content maximization, may be at play.

— Presumably economy is another factor that could be relevant. A monomorphemic form is more economical than a polymorphemic one.

— Given the discussion so far, economy cannot be the most important one in Mandarin, at least in the lexicalization of caused change.

— But if content maximization can be satisfied to some extent, satisfying economy as well should be a motivating factor for preferring, or at least allowing, a monomorphemic form.

— Below, I argue that monomorphemic verbs of caused change in Mandarin can indeed be understood as satisfying content maximization, albeit within the confines of the MRC.

3.2 Monomorphemic verbs of caused change also maximize content

— Monomorphemic verbs are arguably the less favoured option for expressing caused change: any event of caused change that may be monomorphemically expressed may also be expressed with an RVC, but not vice versa, as discussed earlier.

(7) fúwùyuán **rè-le** shèngcài
server hot-PERF leftover
The server heated the leftovers.

(19) fúwùyuán **zhǔ-rè-le** shèngcài
server cook-hot-PERF leftover
The server cooked the leftovers hot.

(8) fúwùyuán **kāi-le** mén
server open-PERF door
The server opened the door.

(20) fúwùyuán **tuī-kāi-le** mén
server push-open-PERF door
The server pushed the door open.

(21) Sānmáo bǎ nà běn shū **fàng/rēng-jìn** xiāngzi-lǐ le
Sanmao BA that CL book put/throw-enter box-within PRT
Sanmao put/threw that book into the box.

— The less favoured status of monomorphemic forms of expressing caused change is consistent with the idea that forms that can encode more elements of grammatically relevant meaning are preferred over others.

— In addition, I speculate that the agentivity requirement of monomorphemic verbs of caused change can also be seen as an indicator of content maximization.

— Other things being equal, a verb that is specified to be agentive does encode more about the causing event than one that has no agentivity specification.

— This assumption would predict that all monomorphemic verbs of caused change are agentive, but the prediction is not entirely borne out.

— A very small number of such verbs do allow non-agentive causers. But their lack of an agentivity specification is still consistent with assuming the predominance of content maximization.

3.3 Non-agentive monomorphemic verbs of caused change do not specify a result

— A very few monomorphemic verbs of caused change in Mandarin allow non-agentive causers, including *jiù* 'save/rescue' and *hài* 'hurt/harm'.

(22) hùliánwǎng de   chūxiàn jiù-le   zhāoshāng yínháng   de   mìng
      internet   ASSOC appear save-PERF China Merchants Bank ASSOC life
      The appearance of the internet saved the life of the China Merchants Bank. (PKU)[3]

(23) kuānróng   hé rén-aì jiù-le   wǒ
      magnanimity and kindness save-PERF 1sg
      Magnanimity and kindness saved me.

(24) jìhuà jīngjì   hài-le   yì guó
      plan economy harm-PERF one country
      A planned economy hurt the entire country. (PKU)

(25) xūróngxīn hé   miànzi guānniàn hài-le wǒ
      vanity   and face   concept   harm me
      Vanity and the idea of "face" was my downfall. (PKU)

(26) shì wǒ hài-le   nǐ, zhè dúyào shì wǒ gěi nǐ hē   de
      be 1sg harm-PERF 2sg this poison be 1sg give 2sg drink PRT
      It was I who harmed you, it was I who gave this poison to you to drink. (PKU)

— Although these verbs are not specified to be agentive, they can also be argued to support the prominent status of content maximization.

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[3]PKU indicates an example from the Peking University Centre from Chinese Linguistics online corpus, available at http://ccl.pku.edu.cn:8080/ccl_corpus/.

— I propose that the reason these verbs of caused change are not agentive is because they also do not specify a particular kind of result.

— To *jiù* 'save/rescue' or to *hài* 'harm' entails only that the saved or harmed entity participates in a better or worse situation than before. Neither of these verbs entails a particular kind of result that is attained.

— This point is demonstrated by the ability of these verbs to combine with verbs describing different kinds of results in an RVC:

(27) *jiù huó* "save the life of *lit.* save-alive"

jiù chū "rescue from some adverse situation *lit.* save-out"

jiù xǐng "restore to consciousness *lit.* save-awake"

jiù qǐ "rescue by lifting up from a lower place (usually water) *lit.* save-arise"

(28) *hài sǐ* "cause someone's death *lit.* harm-die"

hài kǔ "cause someone's suffering *lit.* harm-bitter/suffer"

hài cǎn "make someone destitute *lit.* harm-destitute"

hài qióng "bring someone to poverty *lit.* harm-poor"

3.4 Result, agentivity, and content maximization

— In contrast to their non-agentive counterparts, monomorphemic verbs of caused change that are agentive also specify a particular kind of result.

— Caused CLM verbs specify a result location.

— The other caused COS verbs such as *rè* 'to heat', *kāi* 'open' share the same name as the verb naming the result state verb.

— I argue that the "agentivity split" between these two kinds of monomorphemic verbs of caused change stems from the relative specificity of the result described by the verb.

3.4.1 Verbs with a specific result

— For verbs that specify a certain kind of result, an agentivity specification provides a clue to the kind of causing event for the result.

(7) fúwùyuán **rè-le** shèngcài
server hot-PERF leftover
The server heated the leftovers.

(8) fúwùyuán **kāi-le** mén
server open-PERF door
The server opened the door.

— Agentive *rè* 'to heat' in (7) is usually used for situations that involve heating food, and are interpreted as involving the deliberate use of a heat source. Although the verb may be used to describe situations not related to heating food, it still requires that some heating instrument be applied.

— For instance, (29) is interpreted as Sanmao turning on the electricity (on a cushion with electric heating) or using hot water bottle to heat up the cushion, rather than Sanmao sitting on the cushion to heat it up.

(29) Sānmáo rè-le zuò-diàn
Sanmao heat-PERF seat-cushion
Sanmao heated the seat cushion.

— Similarly, (8) is most naturally understood as the server opening the door in canonical fashion – turning a knob or pushing a handle, rather than say, kicking the door open, or leaning on a door that is not fully closed to open it.

— As noted above, monomorphemic verbs of caused change always allow expression via an RVC. (7)-(8) are synonymous with (30)-(31), which involve semantically bleached activity verbs that describe the causing action.

(30) fúwùyuán **nòng-rè-le** shèngcài
server make-hot-PERF leftover
The server heated the leftovers.

(31) fúwùyuán **dǎ-kāi-le** mén
server hit-open-PERF door
The server opened the door.

— Imaginably, the possibility of monomorphemic verbs of caused change such as *rè* 'heat' and *kāi* 'open' arises from the relatively conventionalized manners associated with achieving certain kinds of results.

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— The semantically bleached verbs describing these conventionalized causing actions do not add much to the RVC meaning except to indicate that an agentive action of the canonical sort is involved.

— This same information may be conveyed by the agentive monomorphemic verb of caused change, satisfying economy without sacrificing content. This interpretation supports the more general understanding that content maximization is a driving principle behind the encoding of events of caused change in Mandarin.

3.4.2 Verbs without a specific result

— For verbs such as *jiù* 'save/rescue' and *hài* 'harm', the kinds of results that may arise from saving or harming can range between situations as widely varying as life, death, social status, spatial position, etc.

— Even if the causer of such a range of situations were specified to be agentive, it would be of little, if any, help in narrowing down the kinds of causing actions (or indeed, non-action) that would bring about the relevant result.

— That is, without a specific kind of result, an agentivity specification would serve no purpose in restricting the kinds of causing events that could be understood to have brought about the result.

— In such cases, it seems an agentivity specification would simply reduce the expressive flexibility of the verb without adding to its content.

3.4.3 The content maximization effect of agentivity

— To sum up, both agentive and non-agentive monomorphemic verbs of caused change lend support to the idea that, in the expression of events of caused change in Mandarin, content maximization is key.

— Content maximization is not simply about more entailments: otherwise we would not expect non-agentive monomorphemic verbs of caused change to be possible.

— Rather, an agentivity specification in monomorphemic verbs of caused change serves to provide information or to narrow the range of interpretations about the nature of the causing event, i.e. it provides manner-related content without actually specifying manner in verb that encodes result.

4   Concluding remarks

— Languages differ in the contentfulness of their expressions of caused change.

— As noted in Levin and Rappaport Hovav (2006), such differences have been long noted, beginning with Talmy's (1975 two-way typology of directed motion events based on verb- and satellite-framing strategies in different languages.

— Apart from MRC, which pertains to the lexical level, languages also show different encoding possibilities for causing event manner and caused result at the phrasal level. While English allows a manner verb to occur with a complement describing a result in directed motion sentences (32) and in resultative sentences (34), Romance languages generally use a result verb in both cases (33), (35), expressing manner with a manner adjunct or adverbial.

(32)   An old woman hobbled in from the back.
       (Levin and Rappaport Hovav 2006: (1a))

(33)   Une   vielle   femme   arriva   en   boitant   de   l'arrière-boutique.
       an   old   woman   arrived   in   limping   from the back-store
       (French: Vinay and Darbelnet 1958: 105, from Levin and Rappaport Hovav 2006: (1b))

(34)   Marie sponged the table clean.

(35)   Marie a   nettoyé la table avec une éponge
       Marie has cleaned the table with a   sponge
       Marie cleaned the table with a sponge.

— These phenomena are well-studied, but the reasons behind this cross-linguistic variation are not well-understood.

— This paper shows that Mandarin allows more than one option in encoding events of caused change (as was also observed to be the case for directed motion encoding patterns in various languages, see e.g. the discussion in Beavers et al. 2010 and the references cited therein).

— Despite the availability of different options, RVCs can be said to be the predominant encoding pattern in Mandarin. I have argued that this reflects the primary status of content maximization in Mandarin speakers' grammar.

— I have also argued that an agentivity specification in monomorphemic verbs of caused change, as well as the lack of one, also reflect the same principle, while also reflecting the effects of manner result complementarity and economy.

— This exploration may help shed light on some of the factors that may be at play in determining the predominant forms for encoding events of caused change across languages.

— With respect to agentivity, this work has also highlighted its relationship with result specifications of a verb: where a verb specifies a certain kind of result, an agentivity specification serves as a proxy for a manner component, narrowing the range of actions that can be understood to bring the relevant result about. Where the verb does not specify a kind of result, an agentivity specification has no effect on maximizing content. Its effect would simply be to reduce the expressive flexibility of a verb. This is presumably the reason that verbs that do not describe a specific kind of result are also not specified to be agentive.

For further exploration

— Other caused change of state verbs that apparently allow non-agentive causers but do specify a particular kind of result (Martin's talk):

— Some of these verbs describe events of caused change with results that are brought about by a certain kind of canonical causer. These seem to be the only non-agentive subjects allowed with these verbs (36-37) (cf. (38)).

shāo 'burn'

(36) dàhuǒ shāo-le qǐyè   de   fāzhǎn xīn
     big   fire burn-PERF industry ASSOC develop heart
     The great fire burnt (up) the industry's heart for development. (PKU)

(37) ... zhú-huǒ   shāo-le   dàren bìn-fà
       candle-fire burn-PERF sir   sideburns-hair
     The candlelight burnt sir's hair (PKU)

(38) #dǎhuǒjī shāo-le   lāji
     lighter burn-PERF trash
     Intended: The lighter burnt the trash.

mái 'bury'

(39) shā bǎ gǔ   zhànchǎng mái le
     sand BA ancient battlefield bury PRT
     Sand buried the ancient battlefield.

(40) dàfēng bǎ   gǔ zhànchǎng mái   le
     big   wind BA ancient   battlefield bury PRT
     Intended: Strong winds buried the ancient battlefield (e.g. by blowing sand over it).

— Although such non-agentive causers are indeed attested with these verbs, the examples are few. A PKU search for *huǒ shāo-le* 'fire burn-PERF' turned up only 3 examples with this kind of transitive use, out of 202 instances of this string.

— Similarly for *mái* 'bury', a PKU search for *mái-le* 'bury-PERF) turned up only three examples of this sort, including (39) (which was also one of two examples from a linguistics textbook!).

— *guān* 'close' is strongly agentive, but examples as in (41-(42) are attested, although rare:

(41) fēng guān-le mén
      wind close-PERF door
      The wind closed the door.

(42) fēng chuī-guān-le   mén
      wind blow-close-PERF door
      The wind blew the door closed.
      (Examples from http://hunan.ifeng.com/a/20161202/5197259_0.shtml)

— Potentially, these are used in analogy with *kāi* 'open'.

— the upshot: need for finer-grained understanding of monomoprhemic verbs of caused change in Mandarin (and eventually other Chinese languages)

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Appendix

Caused CLM verbs specify a result

— The locative PP in sentences such as (6a) should be considered an argument selected by the verb.

— This treatment receives support from the ability of the locative phrase to occur both after the object and before the verb, with a result interpretation.

— These properties are not available to other verbs, e.g. *tuī* 'push', Even a verb such as *tuī* 'push' may be used in expressions of caused change of location, it requires a directional morpheme such as *jìn* 'enter', and not the locative *zài* 'be at' (43a).

— In pre-verbal position, the locative phrase expresses the location of the pushing event rather than its spatial goal (43b).

(43) a. *Sānmáo **tuī-le** yì zhāng lúnyǐ zài fáng-lǐ
     Sanmao push-PERF one CL pen enter room-within

     Sanmao pushed a wheelchair into the room.

   b. Sānmáo **tuī-le** yì zhāng lúnyǐ jìn fáng-lǐ
     Sanmao push-PERF one CL pen enter room-within

     Sanmao pushed a wheelchair into the room.

   c. *Sānmáo **zài fáng-lǐ** **tuī-le** yì zhāng lúnyǐ
     Sanmao be.at room-within push-PERF one CL wheelchair

     Sanmao was in the room pushing a wheelchair.
     NOT: Sanmao pushed a wheelchair into the room.

— To reiterate, verbs such as *fàng* 'put' select for a locative predicate (44).

(44) *fàng* 'put': $\lambda P_{LOC}\lambda y\lambda x\lambda e\exists e'$ [put$'(e)$ & Agent(e, x) & Theme(e, y) & [P$_{LOC}(y)](e')$ & Result(e, e')]