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VERBAL COMPOUNDING AND CAUSATIVITY IN MANDARIN CHINESE

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*Language is an anonymous, collective and
unconscious art; the result of the creativity of
thousands of generations.*
(Edward Sapir)

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Abstract

L'oggetto di studio di questa tesi sono i composti verbali [V V]$_V$ con testa a sinistra in cinese mandarino. Tali formazioni costituiscono un fenomeno di grande interesse, in quanto rappresentano un'eccezione alla tendenza generale del cinese a formare parole composte con testa a destra. Questa ricerca si focalizza, in particolare, su alcune tipologie di composti causativi con testa a sinistra; in questo lavoro, tali composti sono considerati come una strategia innovativa del cinese moderno, diffusasi in seguito alla perdita di altri mezzi per esprimere causatività in questa lingua, nel quadro del cambiamento tipologico del cinese da lingua maggiormente sintetica a lingua maggiormente analitica.

I composti causativi oggetto di questa ricerca sono stati analizzati utilizzando il *framework* proposto da Ramchand (2008), che consiste in una scomposizione sintattica della struttura dell'evento. Il lavoro è supportato empiricamente da una varietà di dati provenienti da diverse fonti. Innanzitutto, i dati sono stati ricavati dalla bibliografia sull'argomento e da alcuni dizionari di cinese mandarino. Inoltre, sono stati utilizzati due *corpora* di cinese mandarino (il corpus del Centro di Linguistica Cinese dell'Università di Pechino e, marginalmente, il corpus di cinese mandarino dell'*Academia Sinica*), testi letterari e giornalistici (soprattutto testi disponibili on-line) e dati tratti da ricerche sul web. Infine, per i giudizi di grammaticalità ci si è avvalsi anche della consulenza di parlanti nativi, soprattutto studenti universitari.

Il primo tipo di verbi complessi analizzato è costituito da composti in cui V$_1$ è una radice verbale *light*, fonologicamente realizzata, come ad esempio 弄 *nòng* 'fare', 打 *dǎ* 'colpire', 搞 *gǎo* 'fare', 加 *jiā* 'aggiungere, aumentare'. Questi verbi *light* sono stati considerati, all'interno del *framework* proposto da Ramchand (2008), come *items* lessicali causativi che formano la versione transitiva di verbi incoativi, attraverso un processo di costruzione della struttura. L'alternanza causativa in cinese, dunque, può essere ottenuta per mezzo di verbi *light* che marcano la variante transitiva.

Tra le radici causative *light*, una particolare attenzione è stata rivolta a 打 *dǎ*, il cui sviluppo diacronico ci ha portato ad ipotizzare che la sua funzione come elemento lessicale causativo si sia sviluppata a partire dal suo significato di 'fare, creare'. A sostegno di questa ipotesi, la radice 打 *dǎ* è stata messa a confronto con forme

parallele di altre due lingue sinitiche, ossia 拍 *phah4* nel dialetto Min meridionale parlato a Taiwan e 打 *da2* in Hakka.

Inoltre, in questo lavoro è stata analizzata come elemento causativo anche la radice 加 *jiā* 'aggiungere, aumentare'. Questa radice rappresenterebbe un tipo particolare di verbo causativo *light*: forma la versione transitiva di verbi deaggettivali di scala aperta, in particolare di quei verbi che esprimono un "aumento" nella proprietà denotata dalla base aggettivale. I composti causativi formati con una radice verbale *light* sono stati messi a confronto con un altro tipo di verbi complessi, ossia verbi derivati con il suffisso 化 *-huà* '-izzare, -ificare, ecc.' (ad es. 现代化 *xiàndàihuà* 'modernizzare', 美 化 *měihuà* 'bello + SUFF = abbellire), un modello di formazione di parola piuttosto produttivo in questa lingua, sottolineando le differenze in termini di caratteristiche e di funzioni tra il suffisso 化 *-huà* e i verbi causativi *light*.

La discussione sui verbi causativi *light*, che tiene conto anche di elementi simili in altre lingue sinitiche (il dialetto Min meridionale parlato a Taiwan e l'Hakka), fornisce argomenti a sostegno dell'ipotesi che la direzione dell'alternanza causativa sia da incoativo a causativo (cfr. Hale & Keyser 1998, Hoekstra 1992, 2004, Ramchand 2008) e non viceversa (cfr. Levin & Rappaport Hovav 1995, Reinhart 2002, Chierchia (2004 [1989]), dal momento che il verbo *light* esplicita la presenza di una componente causativa e la forma transitiva è strutturalmente marcata.

Il secondo tipo di verbi complessi presi in esame sono i composti risultativi, oggetto di un vivace dibattito nella bibliografia sull'argomento. In questo lavoro si sostiene che i composti risultativi, così come i verbi formati con un verbo causativo *light*, esprimono causatività diretta. La differenza tra i due tipi di verbi complessi sta nel fatto che, mentre i composti formati con un verbo *light* esplicitano la presenza di una componente causativa, ma non specificano il tipo di azione che porta allo stato risultante, nei composti risultativi viene specificata l'azione particolare che porta al cambiamento di stato.

L'analisi dei composti risultativi basata sul *framework* proposto da Ramchand (2008) permette di superare molte delle difficoltà derivanti da approcci che cercano di spiegare le proprietà di questi composti in base alla transitività dei costituenti (ad esempio, Li 1990) ed evidenzia i vantaggi di un approccio basato sulla struttura dell'evento (cfr. Cheng & Huang 1994). Inoltre, questo tipo di analisi permette di

scomporre l'evento in una struttura funzionale che si presuppone essere universale: i blocchi fondamentali che costituiscono l'evento sono gli stessi a livello cross-linguistico (cfr. Ramchand 2008, Son & Svenonius 2008). La scomposizione sintattica della struttura eventiva dei composti risultativi del cinese fornisce anche sostegno all'ipotesi secondo la quale tali composti hanno testa a sinistra sulla base di motivazioni strutturali (cfr. Cheng & Huang 1994).

L'ultimo tipo di composti causativi analizzati sono verbi complessi che, a nostro avviso, esprimono causatività indiretta. Diversamente dagli altri due tipi di verbi complessi analizzati in questo lavoro, questi composti permettono un certo grado di autonomia dell'evento causato, che varia a seconda del tipo di V_1 utilizzato. Il gruppo di possibili V_1 utilizzati nella formazione di questi composti è piuttosto ristretto: ad esempio, 请 *qǐng* 'chiedere', 邀 *yāo* 'invitare', 求 *qiú* 'chiedere, richiedere', 劝 *quàn* 'dare un consiglio/persuadere', 促 *cù* 'promuovere', 助 *zhù* 'aiutare', 逼 *bī* 'forzare', 迫 *pò* 'forzare', 禁 *jìn* 'proibire', 拒 *jù* 'rifiutare'.

L'analisi di queste forme verbali complesse in cinese mandarino, anche in prospettiva diacronica e, marginalmente, cross-linguistica, ci ha permesso di sostenere la proposta di Ramchand (2008), secondo cui i blocchi fondamentali che costruiscono il significato dell'evento sono gli stessi per tutte le lingue, e le lingue variano solo nel modo in cui esprimono la struttura dell'evento, a seconda dell'inventario di *items* lessicali disponibili e di altre caratteristiche idiolinguistiche. Dunque, la preferenza per l'espressione di eventi complessi in cinese attraverso la composizione sarebbe strettamente legata all'analiticità di questa lingua.

L'indagine sui composti causativi in cinese mandarino ha anche dimostrato che i composti con testa a sinistra in questa lingua sono caratterizzati da una struttura funzionale gerarchica soggiacente, in cui i due costituenti rappresentano lo *spell-out* di teste differenti di questa struttura. Sarebbe proprio la presenza di struttura funzionale a guidare l'interpretazione di questi composti; infatti, mentre i composti con testa a destra in cinese sembrano essere caratterizzati da una grande libertà di interpretazione (le relazioni possibili tra i costituenti possono essere molteplici), caratteristica particolarmente evidente nei composti nominali, i composti con testa a sinistra sembrano avere un'interpretazione piuttosto ristretta.

Abbreviations

1: first person
2: second person
ACC: accusative
ADV: adverb
ANTICAUS: anticausative
ASP: aspectual marker
BA: Mandarin functional particle 把 *bǎ* (used to place the object before the verb)
CAUS: causative
CL: classifier
CONJ: conjunction
DC: declarative
DE: Mandarin nominal subordinate marker 的 *de*
DE$_1$: Mandarin resultative marker 得 *de*
DEM: demonstrative
ERG: ergative case
FP: Mandarin final sentence particle 了 *le*
FEM: feminine
FUT: future
FV: final vowel
IMP: imperative
INF: infinitival form
LOC: locative
M: masculine
NOM: nominative
NONPAST: non-past
OBJ: object
PART: particle
PASS: passive
PL: plural marker
PERF: perfective
PREP: preposition
PRES: present tense
PROG: progressive
PRON: pronoun
PAST: past tense
SG: singular
TOP: topic
TRANS: transitive

1. Introduction: Chinese compounding and Chinese verbal roots

1.1 Introduction

This research originates from the observation of the striking behaviour of Chinese[1] compounding, which seems to form both right-headed and left-headed compounds (cf. Packard 2000, Ceccagno & Basciano 2007), thus contrasting with most languages of the world, where compounds are invariably either right-headed (e.g. Germanic languages, cf. Williams 1981, Selkirk 1982, Trommelen-Zonneveld 1986, Di Sciullo and Williams 1987) or left-headed (e.g. Romance languages, cf. Scalise 1984, Corbin 1987, Varela 1990). In particular, excluding double-headed compounds (i.e. compounds with a coordinate structure), Chinese nominal compounds are invariably right-headed; in contrast, verbal compounds can be either right-headed or left-headed. At a closer look, what emerges is that while right-headed compounds are characterized by a certain degree of freedom of interpretation, which is particularly visible in nominal compounds (cf. Li & Thompson 1981), the interpretation of left-headed (verbal) compounds is quite restricted.

In this study we focus on left-headed causative compounds and we aim at showing that these compounds represent complex event structures, where the two constituents are the spell-out of different heads in a functional hierarchical structure that guides the interpretation of the compound as a whole. We will analyse these compounds adopting the framework put forth by Ramchand (2008), which consists of a syntactic decomposition of the event structure. We claim that causative left-headed compounds in Chinese represent an alternative analytical strategy to express causativity, following

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[1] The term 'Chinese' is a general term which can be used to include all the Sinitic languages, also known as Chinese dialects. In this thesis, we will use Chinese to refer to standard Modern Chinese, i.e. the official language of the People's Republic of China (PRC), known as 普通话 *Pǔtōnghuà*, lit. 'common language', and, also, as a cover term for different historical stages of such language. Another term commonly used to indicate the standard Chinese language is 汉语 *Hànyǔ* 'lit. the language of the Han', which is the main ethnic group in China (above 90% of the whole population). In this thesis we will also use the term 'Mandarin Chinese' with reference to the standard language; this is a term coined in the XVI century by Portuguese people to render the Chinese term 官话 *guānhuà*, i.e. the common language used among the so-called mandarins (i.e. imperial officials). We will also use the term Old and Middle Chinese to refer to previous stages of the language, and the term Classical Chinese to refer to the written language up to the XIX century.

the loss of other morphological and phonological means which could convey such meaning.

In this chapter, we will provide an overview on Chinese compounding, also in relation to disyllabism. We will introduce the notion of compounds and provide an overview of the different kinds of compounds found in Chinese. We will then introduce the issue of headedness and highlight the difference between right-headed and left-headed compounds. We will particularly focus on verbal compounds, mainly on [V V] compounds, on their structure and on their interpretation, showing that, differently from nominal compounds, they can be either right-headed or left-headed. We will also consider the possible relation between [V V] compounds and the so-called serial verb constructions. Finally, in the second part of the chapter, we will introduce the framework that we will adopt in the analysis of Chinese causative compounds, i.e. Ramchand's (2008) 'first phase syntax', and we will apply it to Chinese verbal roots.

1.2 Disyllabism and compounding

It has been shown that in Mandarin Chinese the great majority of words are compounds (80% according to Shi 2002 and Xing 2006). The great productivity of compounds seems to be somehow connected to the tendency to disyllabism in this language (cf. Masini 1993).

As highlighted by Packard (1998), one of the strongest changes in the Chinese language is the passage from monosyllabism to disyllabism; according to Packard (2000:256), the process of disyllabification started already during the Zhou dynasty (1122-256 B.C.).

Actually, the lexicon of Old Chinese [2] has a strong tendency towards monosyllabism, where each syllable corresponds to a morpheme, which, in turn, acts

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[2] Old Chinese refers to the language up to the end of the Han dynasty (汉朝 *Hàncháo*; 206 B.C.-220 A.D.). Middle Chinese refers to the Chinese language up to the 10th century. Here we adopt the periodization of Chinese language in Xu (2006):
    Old Chinese: 11th-1st centuries B.C.
    Early Old Chinese: 11th-5th centuries B.C.
    Late Old Chinese: 3rd century B.C.-1st century A.D.
    Middle Chinese: 1st-10th centuries A.D.
    Early Middle Chinese: 1st-5th centuries A.D.
    Late Middle Chinese: 8th-10th centuries A.D.
    Modern Chinese: 10th-20th centuries
    Contemporary Chinese: 20th-

as a word. However, polysyllabic words are found in the previous stages of the language as well: e.g. 百姓 *bǎixìng* 'hundred-surname = common people', 寡人 *guǎrén* 'lonely-person = I (used by a sovereign)' (cf. Pulleyblank 2004:1736), but their number is quite limited. Apparently, in the evolution towards the modern language, the Chinese lexicon has undergone a massive process of disyllabification: while before 200 B.C. disyllabic words accounted for about 20% of the lexicon (at least in the written style), in the modern language, as we have mentioned, they are above 80% (cf. Shi 2002:70-72) and the disyllabic word has become the preferred word form.

Since in Chinese the syllable largely coincides with the morpheme[3], and thus most disyllabic words are formed by two lexical morphemes, Chinese has often been defined as a "language of compound words" (cf. Lin H. 2001). However, as pointed out by Arcodia (2007), disyllabification and compounding are two distinct, albeit related, phenomena.

In the literature two kinds of explanations have been proposed for the phenomenon of disyllabification of the Chinese lexicon: a 'functional' explanation (e.g. Cheng 1992, Packard 2000) and a 'phonological' explanation (e.g. Norman 1988, Wang 1998, Lin H. 2001, Shi 2002). According to the 'functional' explanation, the transition from a primitive society to a feudal one (between 1000 and 300 B.C.) led to the necessity of enriching the lexicon in order to express new concepts: "the shift towards the use of disyllabic words occurred when free monosyllabic words combined into new disyllabic words both through compounding […] and through abbreviation of longer phrases. The newly juxtaposed morphemes subsequently often lost their status as free words, undergoing semantic shift or reduction due to the general effects of lexicalization […]" (Packard, 2000:365). At the beginning, subsyllabic devices of word formation (cf. Baxter & Sagart 1998) were sufficient to

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[3] Nevertheless, Chinese has morphemes formed by two or more syllables as well, e.g. 蝴蝶 *húdié* 'butterfly', 葡萄 *pútáo* 'grape', which are composed by syllables that do not have a meaning of their own (on the various types of polysyllabic morphemes cf. Lin H. 2001). Many polysyllabic morphemes in Chinese are created as loanwords, many of which entered into the Chinese lexicon starting from the second half of XIX century (cf. Masini 1993), e.g. 摩托 *mótuō* 'motorcycle', 摩登 *módēng* 'modern', 沙发 *shāfā* 'sofa'. However, some disyllabic morphemes, such as the above mentioned 葡萄 *pútáo* 'grape' or 玻璃 *bōli* 'glass', were introduced in Chinese as loanwords much earlier and their origin is not evident for the average speaker. Often, the syllables composing a polysyllabic morpheme, when used in isolation, are lexical morphemes. However, if the word were divided into morphemes and then read as if each morpheme were a constituent of a compound, the resulting meaning would be quite bizarre, e.g. 沙发 *shāfā* would read 'sand + deliver'. Therefore, these words are considered monomorphemic even though they are polysyllabic (cf. also Basciano & Ceccagno 2009).

expand the vocabulary. However, with the further development of the society, the processes of alteration of the syllable were no longer sufficient; this made necessary the creation of many bimorphemic (and disyllabic) words (cf. Cheng 1992). The presence of a great number of disyllabic words in the Chinese lexicon led to the simplification of the phonological system, since the phonological distinctions that originally distinguished words became no longer necessary.

According to the 'phonological' explanation, the tendency to disyllabism was the consequence of the simplification of the phonological system. The simplification is analysed as the consequence of phonological erosion, which made homophonous many syllables that were distinct before[4]. Therefore, disyllabism would simply be a solution to the problem of the great number of homophonous syllables, since adding an extra syllable could solve ambiguity. The growing tendency to disyllabism has led to the development of word formation devices, such as reduplication, derivation and, above all, compounding.

As highlighted by Arcodia (2007), the phonological account, in principle, does not exclude the functional account and, actually, some authors observe that there might be an interplay of these two motivations: "the increasing complexity of the lexicon, together with the simplification of the phonological system, provides an endless force to advance the tendency to disyllabification" (Shi 2002:74). Also Packard (2000:267) considers the phonological explanation to be more plausible, "because it involves two processes that remain operative in the modern language: the continued simplification of the Chinese phonological system [...] and the continuation of 'compounding' as a way of forming new words".

Feng (1998)[5], adapting this view, states that the process of simplification of the phonological system, in the passage from Old to Middle Chinese, caused the phonological "weight" of the syllable to be insufficient: the minimal syllable became

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[4] In Old Chinese (around 1000 B.C.), the minimal syllable was CVC and the maximal one was CCCMVCCC (C = consonant, V = vowel, M = medial), with at least ten possible final consonants. In Middle Chinese (around 800 A.D.), the syllable structure was simplified to CV (minimal) and {C, S} V {C, S} (maximal) (S = semivowel), with no consonant cluster allowed in the coda and only two types of final consonants, three nasals and three stops. In the modern language, the minimal syllable can be a vowel, which may be preceded by a semivowel and/or a single consonant; no consonant clusters are allowed, and the only possible codas are [n] and [ŋ] (cf. Feng 1998, Yip 2000, Arcodia 2007). Mandarin Chinese has only 405 syllables, which may be read in four tones (Lin H. 2001:27-29); only 297 syllables have a single meaning, and the rest of them have at least two meanings, often corresponding to different characters (Lin H. 2001: 9 and 85)

[5] Feng (1998) adopts the framework of Prosodic Morphology (cf. McCarty & Prince 1993), where the Prosodic Word is the minimal independent unit of prosody, and it is realized by the foot, which must be binary, either under syllabic or moraic analysis.

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CV, having only one mora, and the bimoraic foot was no longer possible, thus the syllable could no longer serve as a prosodic foot. The need for a heavier prosodic foot caused a change in the structure of the foot from monosyllabic to disyllabic, providing a stimulus for the development of disyllabic words. The new disyllabic foot coincides with what Feng calls a 'two-word prosodic combination'; in this way, the disyllabic foot coincides with the phrase (given that two syllables generally correspond to two words). If the two elements in a disyllabic prosodic word/phrase are used frequently, their relative order may become fixed, becoming thus an 'idiomatized Prosodic Word', which may in turn evolve into a compound through lexicalization, often involving a semantic shift of some sort. This mechanism helps to explain how disyllabism interacts with the creation of compounds. The whole process is represented in (1):

(1)   phonological change > disyllabic feet > disyllabic phrases > idiomatized
       Prosodic Words > compounds (Feng 1998)

The prosodic requirement for two-syllable combinations becomes stronger and stronger, and the stronger it becomes, the more coordinating structures are created, often made of two synonymous or strongly related morphemes; coordinating structures, in fact, are easier to build for prosodic purposes, since it is possible to add to a morpheme a (quasi-)synonym item without significantly changing its meaning (cf. also Wang 1987, Steffen Chung 2006), differently from what happens with modifier-modified structure. At the beginning, the two constituents of a coordinating construction could be used in both orders, e.g. 衣裳 *yīshāng* 'shirt-skirt', 裳衣 *shāngyī* 'skirt-shirt' (cf. Feng 1998:223). Eventually, one of the two orders lexicalized (in this case 衣裳 *yīshāng* 'shirt-skirt') and the new created word has been preserved as such until modern times.

The centrality of compounding in Chinese word-formation can also help to explain the great productivity of verbal compounding in this language (cf. Chen J. 2008) and the preference to express complex event structures by such means. For example, the development of compounding as the preferred means of word formation in Chinese probably favoured the choice of this means of word formation for the expression of causativity, after the loss of other phonological and morphological means. This is in line with the typological shift undergone by Chinese, from a synthetic to an analytic language, as we will see in chapter 2.

1.3 What is a compound in Chinese?

In the linguistic literature there seems to be no universally accepted definition for 'compound'. The term 'compound' has been variously used to refer to words formed by two or more roots, stems, pre-existing words, lexemes, etc. (e.g. Marchand 1969, Bauer 1988, Anderson 1992, Katamba 1993, Fabb 1998, Olsen 2000, Haspelmath 2002, Plag 2003, Lieber 2004, Booij 2005, 2007, Scalise & Vogel 2010). It is difficult to find a cross-linguistically valid definition of 'compound', and this difficulty is also related to the problem of defining what a word is in the languages of the world. Bauer (2006:719) introduces the term 'subword' to talk about the constituent of a compound, in order to cope with difficulties which arise in examining complex words from different morphological types: "[t]he implication of this is that the forms in which the individual subwords appear may be differently defined in different languages; a citation form in one, a stem in another, a specific compounding form in yet a third, a word form in a fourth".

Considering the difficulties which arise in trying to define what a compound is, and given the great typological difference between Indo-European languages and a Sinitic language like Mandarin Chinese, it does not come as a surprise that a Western notion as 'compound' (as well as other notions from the Western linguistic tradition, e.g. the 'morpheme'[6]) has caused much debate in the literature on Chinese word formation (cf. also Arcodia 2007).

Given the substantial identity among character, syllable and morpheme in Chinese (cf. 1.2, and also Steffen Chung 2006[7]), traditionally each word written with more than one character has been considered to be a compound word. However, this definition would include also forms that clearly cannot be defined as compounds:

- words formed with affixes that are almost no longer productive, such as the suffixes 子 -*zi* and 儿 -*er* (cf. Pirani 2007):
  桃儿 *táor* 'peach'
  桌子 *zhuōzi* 'table'

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[6] Linguists started applying the notion of morpheme to Chinese since the beginning of the XX century (Pan, Ye & Han 2004).

[7] Steffen Chung (2006) claims that even though the written character cannot be considered as the basic unit of analysis, in Chinese the stability of 1:1 relation between monosyllable and written character along centuries is a strong evidence for the role of the monosyllable as a structural unit in the analysis of Chinese. DeFrancis (1984) uses the term 'morphosyllabic' to describe the close correspondence between the phonological syllable and the morpheme in Chinese. In this view, polysyllabic words are built starting from available monosyllabic units and, in most cases, they can be analysed according to the meaning of each of the monosyllables (cf. also Basciano & Ceccagno 2009).

- polysyllabic morphemes (mostly borrowings, cf. fn.3):
  葡萄 *pútáo* 'grape'
  玻璃 *bōli* 'glass'

In Chinese there are two terms to refer to compounds, i.e. 合成词 *héchéngcí* 'compose/compound/synthetize-word' and 复合词 *fùhécí* 'compound/complex-word'. In *The Contemporary Chinese Dictionary* (CCD 2002), the lexical entry 复合词 *fùhécí* redirects to 合成词 *héchéngcí*, which is defined as follows (2):

(2) "Compound word; word composed of two or more base morphemes. Compound words fall into two categories:
   a) words composed of two or more roots, such as 朋友 *péngyou*, 庆祝 *qìngzhù*, 火车 *huǒchē*, 立正 *lìzhèng*, 照相机 *zhàoxiàngjī*, 人行道 *rénxíngdào*;
   b) words composed of roots and affixes, such as 桌子 *zhuōzi*, 瘦子 *shòuzi*, 花儿 *huā'ér*, 木头 *mùtou*, 甜头 *tiántou* and 阿姨 *āyí*.
   The former are called compounds, the latter are called derivatives."

Therefore, the definition of compound in (2) includes both proper compounds and derived words[8]. However, it would be more proper to define 合成词 *héchéngcí* as 'complex word' in general and 复合词 *fùhécí* as 'compound word'. Different definitions of 'compound' have been proposed in the Chinese linguistic literature. Chao (1968) defines a compound word as the combination of two or more words; the constituents of a compound can be either syntactic words or bound (non-affixal) morphemes (i.e. bound roots). Li & Thompson (1981) observe that in Chinese there is no clear demarcation between compound and non-compound words: "[...] we may consider as compounds all polysyllabic units that have certain properties of single words and that can be analysed into two or more meaningful elements, or morphemes, even if these morphemes cannot occur independently in modern Mandarin." (p. 46).

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[8]The same kind of definition is given in the 现代汉语规范词典 'Standard dictionary of Contemporary Chinese' (XHGC 2004), where 复合词 *fùhécí* redirects to 合成词 *héchéngcí*: "由两个或两个以上的语素组合成的词(跟"单纯词"相区别)。合成词按结构可分为两类：一类是词根加词根构成的复合词，如书本、友谊、树干等；一类是词根加词缀构成的派生词，如桌子、苦头、花儿等" 'Words composed of two or more morphemes (they are different from monomorphemic words). Complex words can be divided, according to their structure, into two types: compounds formed by two roots, e.g. 书本 *shūběn* 'books', 友谊 *yǒuyì* 'friendship', 树干 *shùgàn* 'tree trunk', etc.; derived words formed by a root and an affix, e.g. 桌子 *zhuōzi* 'table', 苦头 *kǔtou* 'suffering', 花儿 *huār* 'flower', etc.'.

Therefore, according to this definition, the constituents of a compound can be both free and bound roots[9].

In contrast, Packard (2000) claims that compounding is a minor phenomenon in Chinese, and 'bound root words', i.e. complex words formed by at least one bound root, should be regarded as the main output of word formation processes in Chinese. Compounds, according to him, are only those formed by free roots, as the words in (3), whereas in (4) we have examples of bound root words:

(3)　　Compounds:
　　　　a. 冰山 *bīngshān* 'ice + mountain = iceberg'
　　　　b. 马路 *mǎlù* 'horse + road = road'

(4)　　Bound root words:
　　　　a. 电脑 *diànnǎo* 'electricity + brain = computer'
　　　　b. 橡皮 *xiàngpí* 'oak/rubber tree + skin = rubber/eraser'

Dai (1992) too considers as compounds only those words composed of free roots. In contrast, Dong (2004) considers compounding of bound roots, i.e. 词根复合 *cígēn fùhé*, as the most typical pattern of word formation in Chinese, even though free root compounding is found as well.

This divergence in opinions stems from the fact that in Chinese most of the roots are bound roots. According to Packard (2000), 70% of Chinese morphemes are bound roots, i.e. roots that cannot independently occupy a syntactic slot, unless they combine with another morpheme, and thus they are not words. The bound roots in Modern Chinese were free roots in previous stages of the language; thus, they were words, i.e. items able to independently occupy a syntactic slot. The strong tendency of roots in Mandarin Chinese to be bound is related to the disyllabification process sketched in the previous section. According to Dai (1990), the frequent usage of roots in compounding processes over time has led many of them to lose their syntactic independence. For example, 习 *xí* 'practise; review' in Old Chinese was a free root, as shown in the example in (5), adapted from Dai (1990:15):

(5)　　学　　而　　时　　习　　之。
　　　　xué　*ér*　*shí*　*xí*　*zhī*
　　　　learn　and　time　review　it

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[9] Most of the Chinese morphemes are lexical and can be either free or bound; they correspond to roots and can be the bases of word formation processes (cf. Basciano & Ceccagno 2009).

'Learn and review it in time.'
(论语 'Analects', 551-479 B.C.)

The root 习 *xí* 'practise, review' began to be used as the second constituent of compound words, such as 学习 *xuéxí* 'study; learn', losing its syntactic independence. In Modern Chinese the root 习 *xí* is a bound root, unable to occupy a syntactic slot.

However, the boundary between free and bound roots is often not clear at all (cf. Steffen Chung 2006) and bound roots apparently maintain the characteristics they had when used as free roots; native speakers seem to be able to assign a lexical category to them. As a matter of fact, some bound roots in a proper morpho-syntactic context (e.g. in the context 'numeral/determiner + classifier'), can sometimes act as free roots, being able to fill a syntactic slot. For example, the root 鸭 *yā* 'duck' is a bound root, whose corresponding free form is 鸭子 *yāzi* (on the 子 *-zi* suffix cf. also Sybesma 2007[10]); nevertheless it can sometimes fill a syntactic slot by itself, as in the examples in (6), from the PKU corpus:

(6)   a. 跑   了   一   只   鸭
          pǎo   *le*   *yī*   *zhī*   *yā*
          run away ASP one   CL   duck
          'One duck ran away'
    b. 她 觉得 这   只   鸭   非常   漂亮
          tā *juéde* *zhè* *zhī* *yā* *fēicháng* *piàoliang*
          she think this CL   duck very   beautiful
          'She thinks that this duck is very beautiful'

Sproat & Shih (1996) claim that in Mandarin Chinese the word vs. non-word distinction is too simplistic and would be better to talk about a gradation of 'wordiness': some morphemes occur freely as words in Mandarin, others are always bound, and still others may be free in some constructions (or styles) but not in others.

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[10] Sybesma (2007) highlights that bound morphemes such as 孩 *hái* 'child' and 房 *fáng* 'house, room' can become free by adding the suffix 子 *-zi*, which would act as a "liberator" (解放者 *jiěfàngzhě*). According to Sybesma (2007) such morphemes needs the affix 子 *-zi* because they actually are nominal countable morphemes, which require a marker of countability; in Mandarin Chinese this marker would be the suffix 子 *-zi*. In contrast, Sybesma argues that in Cantonese the same function of marker of countablity as the Mandarin 子 *-zi* is performed by classifiers. However, Sybesma (2007: fn.6) also notices that there are also countable nouns in Mandarin that do not have the suffix 子 *-zi*; however, he does not provide an explanation for this. Note also that Sybesma (2007: fn.7) observes that in Cantonese too countable nouns can sometimes bear the suffix 子 *-zi*; nevertheless, he regards these as exceptions.

The most important point is that it does not seem useful to us to distinguish between compound words and bound root words, since all the roots appear to be productively used in Chinese word formation and there seems not to be any clear reasons to distinguish between two different processes of word formation. Bound roots, given their bound nature, could be considered as affixes; nevertheless, from the examples in (7) and (8), it is clear that they are not affixes, since they can appear either as the right or as the left constituent of a complex word.

(7)   房 *fáng*   **'house/room' (bound root):**
        房东 *fángdōng*   'house/room + owner = landlord'
        房间 *fángjiān*   'house/room + room = room'
        乳房 *rǔfáng*   'milk/breast + house/room = breast'
        药房 *yàofáng*   'medicine/drug + house/room = drugstore/pharmacy'

(8)   桌 *zhuō*   **'table' (bound root):**
        桌布 *zhuōbù*   'table + cloth = tablecloth'
        桌面 *zhuōmiàn*   'table + surface = tabletop'
        餐桌 *cānzhuō*   'eat/meal + table = dining table'
        书桌 *shūzhuō*   'book + table = desk'

The examples above seem to show that bound roots are active in Chinese morphology, and in word formation processes they act in the same way as free roots do.

Packard (2000) considers Chinese bound roots similar to Greek and Latinate roots (also called semi-words by Scalise 1984) found in many languages of Europe, which are found in the so-called neoclassical compounds (e.g. *psychology*, *astronomy*). These are bound roots from Greek or Latin with a full lexical meaning, which take part in morphological processes, sharing properties of both words and affixes, but are not able to occupy a syntactic slot; these roots usually are involved in the formation of a learned or specialized vocabulary. However, Chinese bound roots are not restricted to the formation of a learned or a specialized vocabulary, are quite free with respect to the position they can occupy in complex words and do not impose restrictions on the kind of roots they can combine with (for a more detailed description, cf. Basciano & Ceccagno 2009 and Ceccagno & Basciano 2009). Some Chinese bound roots can be possibly considered as the equivalent of semiwords. For example, the root 学 *xué* as a free root means 'study', and as a bound root means 'branch of learning; subject of

study', e.g. 数学 *shùxué* 'number + branch of learning = mathematics', 哲学 *zhéxué* 'wise + branch of learning = philosophy', 法学 *fǎxué* 'law + branch of learning = law; jurisprudence'. In the latter sense, it tends to occupy a fixed position in the complex word and to combine with nouns, forming words belonging to a particular area, and thus in this respect it can be considered analogous to semi-words. However, 学 *xué* can also be used as a bound root, with another meaning, i.e. 'school; learning; knowledge'. In this sense, it is quite free in the formation of compound words: it can appear either as the rightmost constituent, e.g. 大学 *dàxué* 'big + school = university' or as the leftmost constituent, e.g. 学区 *xuéqū* 'school + district = school district'. Moreover, this bound root can combine either with nouns (as in 学区 *xuéqū* 'school + district = school district'), with adjectives (as in 大学 *dàxué* 'big + school = university') or with verbs (as in 上学 *shàngxué* 'go + school = attend school'), and compound words formed with it can be either nouns or verbs (cf. Basciano & Ceccagno 2009:119). Therefore, it does not seem correct to argue that Chinese bound roots are a special class of roots corresponding to European semi-words[11].

Chinese bound roots (i.e. the great part of Chinese roots) can be considered as the equivalent of lexical roots in other languages. However, in a language like English, lexical roots are usually free, i.e. they are syntactic words. In contrast, in a language like Italian, which has a rich inflectional morphology, lexical roots need an inflectional ending to be able to occupy a syntactic slot, e.g. *cas-* + *-a* 'home + -a'. In Chinese, a language with lacks inflectional morphology, bound roots must combine with another morpheme, either a derivational morpheme or another root. For example, the root 椅 *yǐ* 'chair' cannot normally occupy a syntactic slot; it can just combine with

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[11] Chinese roots used in languages sucha such as Japanese, Vietnamese or Korean (Sino-Japanese, Sino-Vietnamese, Sino-Korean, i.e. 'Sino-Xenic' varieties, cf. Norman 1988), languages that received a consistence influence from Chinese throughout the centuries, can be considered as the equivalent of European semi-words. Chinese roots in these languages have often been used to coin words pertaining to a specialized vocabulary, related to science, administration, education, philosophy, and often represent the learned variant of a more common item with the same meaning. See the examples below:
    a. Jap. 電話 *denwa* 'telephone', from the Chinese roots 电 (電) *diàn* 'electricity' and 话 (話) *huà* 'word'
    b. Kor. 수표 *supyo* 'cheque', from the Chinese roots 手 *shǒu* 'hand' and 票 *piào* 'ticket'
    c. Viet. *linh mục* 'spiritual pastor', from the Chinese roots 灵(靈) *líng* 'spirit' and 牧 *mù* 'pastor'
    (cf. Ceccagno & Basciano 2009:18-19).

other lexical roots forming compound words, such as 躺椅 *tǎngyǐ* 'lie/recline + chair = reclining chair'[12].

Therefore, Chinese bound roots are generally unable to occupy a syntactic slot, but nevertheless in word formation processes they act in the same way as free roots do and they actively participate in these processes.

From the above discussion, what seems to emerge is that there is no particular reason to divide compounds from bound root words, and thus we can define a compound in Chinese as a word formed by two or more roots (either bound or free).

However, it should be noted that some compounds contain (non-root) word constituents, as in (9), where the root 果 *guǒ* 'fruit' occurs with the empty suffix 子 *-zi*, forming a word (the left-constituent of the compound).

(9)　　果子酒 *guǒzi-jiǔ* 'fruit + liquor = fruit-based liquor'

Moreover, some compounds can contain a phrasal constituent as modifier (on phrasal compounds in English, see Plag 2003, Lieber & Scalise 2006, among others), as in the example in (10), from He (2004:2-3):

(10)　　盗窃国宝　　　　犯
　　　　dàoqiè-guóbǎo　*fàn*
　　　　steal-state treasure　criminal
　　　　'Thief of state treasures'

Notice that in the example in (10), the right-hand constituent, 犯 *fàn* 'criminal' is a bound root; therefore the compound is formed by a phrasal constituent plus a bound root.

Lastly, the constituent of a compound can also be a possible but non-existing word (cf. Packard 2000:12). Packard (2000:12) illustrates this point with the example in (11):

(11)　　猫头　　　　鹰
　　　　māotóu　　*yīng*
　　　　cat-head　　hawk/eagle
　　　　'owl (lit. cat-headed hawk)'

---

[12] The corresponding free form is 椅子 *yǐzi* 'chair', where 子 *-zi*, as we have mentioned, is an empty morpheme, no longer productive in the language, which signals that the words belongs to the nominal class: in Chinese, words suffixed with empty affixes, such as 子 *-zi*, 儿 *-er* and 头 *-tou*, are unambiguously assigned to a specific lexical category, i. e. the nominal one (cf. Pirani 2007, Sybesma 2007).

According to Packard, the constituent 猫头 *māotóu* 'cat-head' is a morphological word (i.e. a proper output of a morphological rule; cf. also Di Sciullo & Williams 1987) because it is formed following a productive word-formation rule in Chinese, i.e. compounding of two nouns to form a noun ($N^0 N^0 \rightarrow N^0$), as it is evident from the existence of words like 火山 *huǒshān* 'fire + mountain = volcano' and 马熊 *mǎxióng* 'horse + bear = brown bear'. However, unlike words as 火山 *huǒshān* 'volcano' and 马熊 *mǎxióng* 'brown bear', the word 猫头 *māotóu* 'cat-head' may not occupy a syntactic slot, i.e. it is a morphological word but not a syntactic word (Packard 2000:12).

Therefore, a compound in Chinese can be defined as a word formed by two elements, which can be roots (either bound or free), words or phrases (in the modifier position). However, since the core of Chinese compounding is root compounding (i.e. the great majority of compounds are root compounds), in this thesis we focus on compounds made of roots (above all, those composed by two roots).

1.3.1 A classification of Chinese compounds

Many authors (cf. Zhu 1982 among others) agree that the relationship between the constituents of a compound directly follows from syntax. Anderson (1985:44) states that ''several classes of compounds in Mandarin are structurally quite similar to syntactically created phrases. Sometimes the same sequence of formatives, in fact, may correspond either to a phrase or to a compound […]''[13]. This fact has led some authors to analyse the structure of compound words in terms of the syntactic relation between the constituents[14], even though some authors highlight the fact that this does not entail that compounds are equivalent to syntactic structures (cf. Yip 2000: 90-92).

The classifications of compounds based on the syntactic relation between the constituents employ a syntactic description to account for the structure of compound words: according to this approach, the relations between the constituents of compounds are largely the same as those found in syntax. This kind of classification was first proposed by Xia (1946, cit. in Pan, Ye & Han 2004), but the idea has been

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[13] On the criteria proposed to identify Chinese compounds, cf. Chao (1968), Huang (1984), Dai (1992), Duanmu (1998), among others.
[14] Cf. Selkirk (1982: 2): "I will argue that word structure has the same general formal properties as syntactic structure and, moreover, that it is generated by the same sort of rule system [...] In order to underline this fundamental similarity, I will often employ the terms W-syntax and W-syntactic rather than the terms morphology and morphological in speaking of the structure of words.".

fully developed in Chao (1948) and Lu (1964) and widely adopted, with slight modifications (cf. Chao 1968, Yip 2000, among others[15]). Normally this kind of classification recognizes five kinds of compounds in Chinese:

- Coordinate compounds:
  因果 *yīnguǒ* 'cause + result = cause and effect'
  剪贴 *jiǎntiē* 'cut + paste = clip and paste'

- Subject-predicate compounds:
  头疼 *tóuténg* 'head + ache = (have a) headache'
  地震 *dìzhèn* 'earth + shake = earthquake'

- Modificational (modifier – modified):
  车库 *chēkù* 'vehicle + warehouse = garage'
  小费 *xiǎofèi* 'small + cost = tip'

- Verb-object compounds:
  投资 *tóuzī* 'throw + money = invest'
  司机 *sījī* 'take charge of + machine = driver'

- Verb-complement compounds:
  喝醉 *hēzuì* 'drink + drunk = get drunk'
  踢死 *tīsǐ* 'kick + die = kick to death'

In the past literature, among [V V]$_V$ compounds great attention has been devoted to resultative compounds (the verb-complement compounds above), where the verb on the right conveys the result of the action denoted by the verb on the left (cf. chapters 5 and 6). However, more recently some authors highlighted the existence of different kinds of [V V]$_V$ compounds other than resultatives (for an exhaustive picture cf. Steffen Chung 2006). In particular, some authors (cf. Yi 2007, Chen X.L. 2007, Hong 2004, among others) identified the following two kinds:

- Serial verb type compounds (连动型 *liándòngxíng*), where there is a relation of temporal sequence between the two constituents of the compound:
  贩卖 *fànmài* 'buy (to resell) + sell = traffic; sell'
  拆洗 *chāixǐ* 'tear open/take apart + wash = take apart and clean'

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[15] The classification proposed in Yip (2000: 92) is essentially similar to the others of this kind but uses different terms for indicating the various kind od compounds: juxtapositional; modificational (modifier-modified); governmental (verb-object); predicational (subject-predicate); complemental (verb-complement).

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- 'Double complement' type compound (兼语型 *jiānyǔxíng*), where normally there is a relation between the subject and the object of the two verbal constituents (the object of V₁ is the subject of V₂):
  劝退 *quàntuì* 'advise + quit = persuade somebody to quit'
  请教 *qǐngjiào* 'request/ask + teach/instruct = ask for advice/consult'

According to Hong (2004), 'double complement' type compounds are serial verb type compounds. Hong points out that some authors make a distinction between these two kinds because the constituents of this type of verbs parallel those found in syntactic constructions where other (noun) constituents are found between the two verbal phrases (i.e. they resemble what Li & Thompson 1981 term 'pivotal' constructions, better know as object-controlled structures, cf. 1.3.4.2.2). However, according to Hong, all are instances of serial verb compounds. We will return to these kinds of verbs later on.

Even though the analysis based on the syntactic relation between the constituents of the compounds is the most widely adopted one in the literature, other kinds of analyses have been proposed as well: e.g. a relational description (cf. Xia 1946, cit. in Pan, Ye & Han 2004; Packard 2000), a semantic description (for an illustration, cf. Packard 2000), a description based on the kind of modification (cf. Li & Thompson 1981), an approach based on the lexical category of the constituents (cf. Packard 2000). Ceccagno & Scalise (2006) highlight the shortcomings of the different approaches proposed (cf. also Packard 2000, Ceccagno & Basciano 2009) and stress the fact that the whole set of category, functional and semantics level should be taken into account for an exhaustive analysis of compounds, i.e. ''an analysis capable of identifying: the lexical category of the constituents, their grammatical relationship and therefore the classification of the whole compound, the semantics of the constituents, the semantics of the compound and the position of the head (if any)'' (p. 242). They claim that, in the absence of one of these aspects, the analysis is incomplete, if not misleading.

Ceccagno & Basciano (2007) propose a classification of Chinese compounds based on the classification scheme for compounds put forth by Bisetto & Scalise (2005), who identify three macro-types in compounding, characterized by different relations between the constituents, i.e. subordinate, attributive, coordinate. Compounds in each macro-type can be endocentric or exocentric.

Subordinate compounds (SUB) entail a relation of complementation between the head and the non-head. This is clear in compounds with a deverbal head constituent, as Eng. *truck-driver*. A similar relation can be found in compounds that do not have a deverbal head, for example [N+N] compounds where the constituents are typically linked by what they call an 'of-relation', as in *doorknob* ('knob *of* a door'). The head of these compounds, e.g. *leg* in *table leg*, according to Lieber (2009:88), has two arguments: the typical 'R' argument of a noun, which establishes referentiality (cf. Higginbotham 1985), and an additional argument (e.g. *leg of the table*). In this kind of compounds, the non-head constituent satisfies the 'non-R' argument of the head.

Attributive compounds (ATT) are those in which the constituents are linked by a relation of attribution. The prototypical case involves compounds in which the first constituent is an adjective, as in *high school*. Other structural types are found as well, for instance [N+N] attributive compounds, in which the non-head is used as a metaphoric attribute of the head, as in *swordfish* ('fish with a *sword-like* snout'). This type of compounds includes many of the compounds which are generally termed root compounds in the literature (cf. Lieber 2009).

In coordinate compounds (CRD) the constituents are linked by a coordinating relation. This relation can be a conjunctive natural coordination, as in *artist-designer*. In other languages we can find other types of coordination as well. Lieber (2009:88) points out that the two constituents of compounds in this macro-type may be simultaneously predicated of the same referent (e.g. *producer-director*), or they may denote a relationship between the two constituents (e.g. *mother-child*), or else they can be combined into a third referent (e.g. Georgian *dá-dzma* 'sister-brother = siblings', from Wälchli 2005:3; Chinese 父母 *fùmǔ* 'father-mother = parents').

Ceccagno & Basciano (2007) adopt this kind to classification scheme in their analysis of Chinese compounds. We now illustrate Chinese compounds adopting this kind of classification. Ceccagno & Basciano (2007) define as subordinate compounds (SUB) those compounds in which constituents have an argument-head relation. A first type has either a verbal or a deverbal head, which projects an argument satisfied by the non-head constituent, as shown in (12):

(12) a. 毒贩 *dúfàn* [N+N]$_N$ 'drug + vendor = drug trafficker'
      b. 投资 *tóuzī* [V+N]$_V$ 'throw/send + money = invest'
      c. 监事 *jiānshì* [V+N]$_N$ 'supervise + matter/responsibility = supervisor'

d. 喝醉 *hēzuì* [V+V]$_V$ 'drink + drunk = drink (oneself) drunk'

e. 拒载 *jùzài* [V+V]$_V$ 'refuse + transport = '(of a tax driver, etc.) refuse to take a passenger'

The compound in (12a), 毒贩 *dúfàn* 'drug trafficker' is a compound with a deverbal head[16], where the noun constituent acts as the head's argument.

The compound in (12b), 投资 *tóuzī* 'invest', is a verbal compound of the verb-object type, where the leftmost constituent is the head of the compound and the noun acts as the internal argument of the verb. In (12c) the same verb-object relation holds, but the compound is exocentric, giving as its output a noun.

The compound in (12d), 喝醉 *hēzuì* 'drink (oneself) drunk' is a verbal compound of the resultative type, in which the non-head constituent is in a complement relation with the head constituent, specifying the result produced by the event of the head (the left constituent) (cf. chapter 5 and 6).

Lastly, the compound in (12e), 拒载 *jùzài* '(of a tax driver, etc.) refuse to take a passenger', is a complex verb in which the event expressed by the verb on the right depends on that expressed by the verb on the left. Ceccagno & Basciano (2007) term this kind of compounds 'serial verb type' compounds.

A second type of subordinate compound shows a relational noun as head, where the non-head satisfies the 'non-R' argument of the head, as in (13):

(13)   a. 警嫂 *jǐngsǎo* [N+N]$_N$ 'police + elder brother's wife = respectful term for a policeman's wife'

b. 价差 *jiàchā* [N+N]$_N$ 'price + difference = price difference'.

According to Ceccagno & Basciano (2007), attributive compounds (ATT) are those in which the constituents have a modifier-head relation. These can be compounds where: the non-head is an adjective or a noun which expresses a property of the head (14a-b); the non-head constituent acts as an adjunct modifying the head (14c); a verbal non-head acts as a modifier of the head (14d).

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[16] Usually, in Chinese there is no formal distinction between a verb and the corresponding deverbal noun. It can be said that some roots possess both verbal and nominal features. Here deverbal noun should mean a root which can be used either as verb or as noun with the same basic meaning. For examples, in the example in (13a) the root 贩 *fàn* is both a verb, meaning 'buy to resell/deal', and a noun, meaning 'vendor, dealer'.

(14) a. 黑金 *hēijīn* [A+N]$_N$ 'black/illegal + money = black money/money used for illegal activity'
    b. 天价 *tiānjià* [N+N]$_N$ 'sky + price = prohibitive price'
    c. 口算 *kǒusuàn* [N+V]$_V$ 'mouth + (to) do a sum = (to) do a sum orally';
    d. 卖场 *màichǎng* [V+N]$_N$ 'sell + large place where people gather for a specific purpose = big marketplace for selling commodities (i.e. selling place)'

Lastly, coordinate compounds are those which show a logical coordination between the constituents (operator 'and'), as in (15a-b); the two constituents can either denote a relationship between the two constituents (15c) or they can be combined into a third referent (15d)[17].

(15) a. 新锐 *xīnruì* [A+A]$_A$ 'new + sharp = new and sharp'
    b. 教导 *jiàodǎo* [V+V]$_V$ 'teach + guide = teach and guide'
    c. 中意 *Zhōng-Yì* [N+N]$_N$ 'China + Italy = China-Italy'
      (e.g. 中意关系 *Zhōng-Yì guānxi* 'the relationships between China and Italy')
    d. 姐妹 *jiěmèi* [N+N]$_N$ 'older sister + little sister = sisters'

Apparently, Chinese lacks coordinate compounds of the kind of *artist-designer*, where the two constituents refer to a single referent (cf. Arcodia, Grandi & Wälchli 2010). According to Arcodia, Grandi & Wälchli (2010), in Chinese a construction like 学生工人 *xuésheng gōngrén* 'student worker' is normally interpreted as 'student(s) and worker(s)', while an explicit conjunctive marker is required to have the intended interpretation, referred to a single referent, e.g. 学生兼工人 *xuésheng jiān gōngrén* 'student simultaneously worker' = 'student-worker'.

Moreover, apparently Chinese allows also coordinate compounds based on a disjunctive relationship, e.g. 胜负 *shèng-fù* 'victory or defeat', 'success or failure', which Wälchli terms 'alternative co-compounds', where only one alternative may be true. However, this kind of compounds can also have an additive reading, i.e. 'victory and defeat' (cf. Arcodia, Grandi & Wälchli 2010).

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[17] This kind of compounds are termed 'additive' by Wälchli (2005). Wälchli also identifies a 'non-pairing' type among coordinate compounds, i.e. "collection complexes which are exclusively listed by the parts" (p. 139), e.g. 刀叉 *dāo-chā* 'knife and fork'. Moreover, he defines 'collective co-compounds' those which designate a collection complex not exclusively listed by the parts, fairly common in languages of the South Eastern Area, e.g. Ch. 刀枪 *dāoqiāng* 'knife-gun = weapons', Viet. *bàn ghế* 'table-chair = furniture' or Khmer *tok tuu* 'table + closet = furniture', where two instances of the category are made metonymically representative of the set as a whole (cf. Arcodia, Grandi & Wälchli 2010).

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Furthermore, Mandarin Chinese has also examples of what Wälchli (2005) terms 'scalar co-compounds', i.e. compounds which have as referent some scalar property, e.g. height, weight, etc., where the two constituents are adjectives which represent the extreme poles of the scale (16) (cf. Arcodia, Grandi & Wälchli 2010).

(16)   a. 大小 *dàxiǎo* 'big-small = seize'
       b. 长短 *chángduǎn* 'long-short = length'
       c. 快慢 *kuàimàn* 'fast-slow = speed'

Lastly, the constituents of coordinate compounds can share a semantic relation of synonymy (17a), antonymy (17b) or redundancy (17c), where the second constituent is a hyperonym of the first. Marchand (1969:40) terms the latter type 'subsumptive' (cf. Eng. *palm tree*), where the first constituent represents a subclass of the second constituent. Furthermore, there are coordinate compounds characterized by reduplication (17d).

(17)   a. 胜绩 *shèngjì* [N+N]_N 'victory + achievement = win/victory'
       b. 呼吸 *hūxī* [V+V]_V 'exhale + inhale = breath'
       c. 松树 *sōngshù* [N+N]_N 'pine + tree = pine tree'
       d. 天天 *tiāntiān* [N+N]_{Adv} 'day + day = every day'.

1.3.2 Headedness in Chinese compounds

As we have mentioned in 1.1, Chinese shows a very peculiar behaviour as far as headedness is concerned, which is in contrast with the behaviour of most languages of the world where the position of the head is generally either on the right or on the left. The characteristics of Chinese compounding have led different scholars through the years to assume different position on headedness. In what follows, we summarize the main positions on this issue.

Chao (1968:372) distinguishes between subordinate and coordinate compounds in Chinese, observing that "[a coordinate compound] differs from a subordinate compound in that each constituent is a center while in a subordinate compound only the second constituent is the center."; obviously, 'center' is the equivalent of head (cf. the Chinese equivalent for head, i.e. 中心 *zhōngxīn* 'centre, head'). Therefore, according to Chao, subordinate compounds are right-headed. A different view is that of Huang (1998), who concludes that: "[…] Chinese is a headless language in its morphology since neither the rightmost nor the leftmost member of a compound

uniquely determines the category type of a compound" (p. 279) [18]. Huang analyses nearly 24.000 disyllabic compound words and reaches the conclusion that Chinese compounds are headless, observing that compounds with the same structure can have different output categories. However, he points out that noun compounding is more strongly right-headed and verb compounding is more strongly left-headed, while adjective compounding does not show any particular bias either toward the left-hand or the right-hand constituent of the compound (Huang 1998:279). For example, Huang points out that compounds with a [V+N] structure can be nouns, verbs and sometimes adjectives. However, Huang fails to consider the relation between the constituents: the position of the head depends on the relation between the two constituents as well. In a compound such as 卖场 *màichǎng* 'to sell + place = marketplace' (14d), with a [V+N]ₙ structure, the head is the noun constituent and the verb acts as a modifier, i.e. 'the place in which one sells'. On the other hand, in a [V+N]ᵥ compound, such as 投资 *tóuzī* 'to put + money = to invest' (12b), the head is the left constituent, the verb, while the noun acts as its internal argument. Lastly, a [V+N]ₙ compound such as 监事 *jiānshì* 'supervise + matter/responsibility = supervisor' (12c) has the same structure and the same output category as the compound in the first example, but the relation between the constituents is different: it is an exocentric compound where the constituents have a verb-object relation. These examples highlight how not only input and output categories, but also the relation between the constituents contribute to determine the position of the head in a compound (cf. Ceccagno & Scalise 2006, Ceccagno & Basciano 2007).

Packard (2000:42) proposes a generalization for Chinese ('Headedness Principle'), according to which "All verbs have a verb on the left, and all nouns have a noun on the right". Compounds which do not fall in this generalization are considered as exceptions. However, verbal right-headed compounds seem to be quite widespread, thus it is difficult to consider them as exceptions. Moreover, as we will see, in coordinate compounds, apparently both constituents act as heads. These limitations in Packard's generalization have been highlighted by Ceccagno & Scalise (2006). Their data showed the prevailing right-headedness in Chinese compounding, therefore they propose the 'Chinese Compounds Canonical Head Principle': "the canonical position of the head in Chinese compounds is on the right. Exceptions to this principle are the

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[18] For a critical analysis of Huang's positions see Ceccagno & Scalise (2006).

so-called Verb-object compounds and resultative compounds. The status of these two types of construction still appears to be poised between compounds and phrases and thus requires further analysis." (Ceccagno and Scalise 2006:256)[19].

Ceccagno & Basciano (2007) observe the different behaviour of Chinese compounds among the three macro-types used in their classification (cf. 1.3.1). The authors point out that, if we exclude exocentric compounds, the behaviour of Chinese subordinate compounds seems to be in line with Packard's (2000) generalization, according to which nominal compounds are right-headed, whereas verbal compounds are left-headed: subordinate nominal compounds are invariably right-headed, irrespectively of the nature of the non-head constituent, while subordinate verbal compounds are always left-headed. Among verbal compounds, three types are distinguished, i.e. verb-object compounds $[V+N]_V$[20], resulative compounds $[V+V]_V$, and serial verb type compounds $[V+V]_V$.

As far as endocentric attributive compounds are concerned, Ceccagno & Scalise (2006:255) point out that Chinese behaves in a straightforward manner: the head is always to be found on the right and the non-head acts as a modifier. Moreover, in

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[19] Incidentally, we want to remark that, if this were the case, then Chinese compounding would essentially conform to William's (1981) 'Righthand Head Rule': "In morphology we define the head of a morphologically complex word to be the righthand member of that word." (p. 24; cf. also di Sciullo & Williams 1987:24). Actually, Steffen Chung (2006:18-21) concludes that Chinese is right-headed in all parts of its morphology: modifiers always precede the head (for arguments in favour of right-headedness, the reader may refer to the mentioned work).

[20] Verb-object compounds (or constructions) represent a much debated issue in the literature, since they are usually ambiguous between being compounds and phrases. Chao (1968), Li & Thompson (1981), Huang (1984), Chi (1985), Packard (2000), among others, have proposed different criteria to distinguish between verb-object compounds and phrases: lexicalized or specialized meaning, inseparability of the construction, one constituent is a bound root, the construction is exocentric, the ability of the construction to take an object. However, verb-object constructions are often separable (and the object may also be topicalized), even when, for example, their meaning is lexicalized and they can take an object (which should be a proof of their wordhood). See the examples below (adapted from Huang 1984:64):

a. 我   很   担心   这   件   事儿。
   wǒ   *hěn*   *dānxīn*   *zhè*   *jiàn*   *shìr*
   I   very   carry-heart (worry)   this   CL   matter
   'I am very worried about this matter.'

b. 他   担   了   三   年   的   心。
   tā   *dān*   *le*   *sān*   *nián*   *de*   *xīn*
   he   carry (on the shoulders)   ASP   three   year   DE   heart
   'He   worried for three years'

c. 心，   我   一点   都   不   担。
   xīn   *wǒ*   *yīdiǎn*   *dōu*   *bù*   *dān.*
   heart   I   a bit   all   not   carry
   'Worried, I think he will be.'

It is beyond the scope of this thesis to go further into this rather complicated issue. For other positions and critics, cf. Paul (1988), Dai (1992), Xue (2001). The latter author tries to propose a Distributed Morphology (DM) approach to the problem.

attributive compounds all lexical categories – nouns, verbs and adjectives – can act either as the head or as the non-head of the compound (cf. Ceccagno & Basciano 2007).

Lastly, coordinate compounds seem to be double-headed. As stated by Sun (2006), the constituents of coordinate compounds are coordinate in nature or are parallel to each other within a semantic domain. As we have mentioned, according to Chao (1968), in Chinese coordinate compounding, each constituent is a 'center'. Anderson (1985) argues that neither constituent can exclusively be considered as the 'centre'. According to Ceccagno & Basciano (2007), different criteria contribute to show that Chinese coordinate compounds are double-headed (two-headed in their terms). First of all, in coordinate compounds both constituents semantically contribute to the interpretation of the whole compound. Moreover, criteria such as inflection of the head constituent, gender, etc., which in other languages help to identify the constituent that formally acts as the head[21], do not exist in Chinese. Therefore, it cannot be established which constituent provides the morpho-syntactic properties to the whole compound. Lastly, the fact that Chinese compounds do not seem to have a canonical position for the head, in that both right-headed and left-headed compounds are productively formed, as we have seen above, also leads to the conclusion that coordinate endocentric compounds are double-headed.

However, Ceccagno & Basciano (2007) include among coordinate compounds a particular group, i.e. the 'redundant' type, where, as we have seen (cf. 17c), the first constituent represents a sublclass of the second one. Marchand (1969) assumes that for this kind of compounds in English semantic headedness is more evident than in other kinds of coordinate compounds, since the head constituent is a hyperonym of the non-head, i.e. they are right-headed. Therefore, on the basis of semantic criteria, this kind of coordinate compounds can be considered right-headed in the same way as their English counterpart[22]. The observation of the behaviour of Chinese compounds led Ceccagno & Basciano (2007:227) to conclude that, unlike other languages for

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[21] According to different criteria, coordinate compounds in German languages are considered right-headed, taking on the morpho-syntactic properties of the rightmost constituent. For a discussion of copulative compounds in German and English, see Olsen (2001).

[22] Wang W.'s (2001) experiments on Chinese coordinate compounds reveal that the first constituent of a coordinate compound is not always decisive in the lexical decision, against what proposed by Taft & Forster (1976), who claim that in lexical access the first constituent is always decisive, and Zhang & Peng (1992), who claim that the two constituents are equal in importance. Besides, the two constituents in coordinate compounds are not always equally important in lexical recognition.

which the position of the morphological head has been studied and where the canonical head in compounding has been identified to be either on the right (Germanic languages) or on the left (Romance languages), Chinese exhibits three positions for the head: endocentric compounds can be right-headed (nouns and attributive verbs), left-headed (subordinate verbal compounds) and double-headed (coordinate compounds). However, the authors do not motivate on what basis they assign left-headedness to subordinate [V V] compounds (for resultative compounds, they make reference to the position of other authors).

Setting apart double-headed compounds, in Mandarin Chinese nominal compounds are invariably right-headed, while verbal compounds can be both right-headed and left-headed. Why does Chinese apparently allow the formation of left-headed verbs? How can we account for this difference in headedness for nouns and verbs?

In the next section we discuss in more detail the differences between nominal and verbal compounds, and we show that the distinction between right-headedness and left-headedness seems to correlate with the kind of interpretation allowed.

1.3.3 Nominal compounding in Mandarin Chinese

Mandarin Chinese shows a high degree of arbitrariness in the interpretation of nominal compounds. Therefore, it seems that Chinese matches perfectly English root compounding (cf. Downing 1977), where, crucially, all possible logical relations between the two constituents can be instantiated. Li and Thompson (1978) state that Chinese is very similar to English in that nominal compounds can be created at will.

In English, among the possible interpretations of a compound such as *cow-pony* there are: 'a pony with an udder'; 'a pony used to herd cows'; ' pony standing next to a cow'; 'a pony with gazing habits different from a cow' (Downing 1977). In general, root compounds are context-driven: an *apple-juice seat* can refer to 'the seat in front of which a glass of apple juice had been placed' (Downing 1977:819,823); a *bike girl* in the proper context can refer to a girl who left her bike in the vestibule (cf. also Jackendoff 2009)[23].

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[23] Given the striking freedom in the interpretation of compounds, a challenging question has been raised: do speakers of English have general principles for compounding? Psycholinguistic studies (cf. Gleitman & Gleitman 1970, Ryder 1994) have given surprising results in this respect: speakers were far from reliable in giving answers that conformed to linguists' intuitions (cf. Jackendoff 2009:110-111). Such results have led Jackendoff (2009) to ask whether there is any grammatical competence at all involved in interpreting novel compounds. Adopting Bickerton's (1990) idea of protolanguage, Jackendoff (2009) suggests that compounding is a residual phenomenon of a former stage of language,

Chinese seems to behave in the same way, i.e. it seems that in Chinese noun compounding all the possible relationships between the two constituents that form a compound can be instantiated. Li & Thompson (1981:49-53) single out the most common semantic relations between the constituents of a nominal compound (cf. table 1). These authors stress the fact that the twenty-one types of nominal compounds they have listed do not constitute an exhaustive categorization, and in fact one can think about more kinds of nominal compounds from those that appear in table 1. Nominal compounding is a productive and creative process; the only constraint is pragmatic in nature, i.e. the context must be appropriate for naming a certain object.

Table 1 – Types of nominal compounds in Mandarin Chinese (Li & Thompson 1981)

Semantic relation	Example
N_1 denotes the place where N_2 is located	床单 *chuángdān* 'bed + sheet = bed sheets'
N_1 denotes the place where N_2 is applied	唇膏 *chúngāo* 'lip + ointment = lipstick'
N_2 is used for N_1	枪弹 *qiāngdàn* 'gun + bullet = bullet'
N_2 denotes a unit of N_1	铁院子 *tiěyuànzi* 'iron + atom = iron-atom'
N_2 denotes a protective device against N_1	太阳镜 *tàiyángjìng* 'sun + lens/glass = sun glasses'
N_2 denotes a piece of equipment used in a sport, N_1	乒乓球 *pīngpāngqiú* 'ping pong + ball = ping pong-ball'
N_2 is caused by N_1	油迹 *yóujì* 'oil + mark/trace = oil stains'
N_2 denotes a container for N_1	书包 *shūbāo* 'book + bag schoolbag/satchel'
N_1 and N_2 are parallel	花木 *huāmù* 'flower + tree = vegetation'
N_2 denotes a product of N_1	蜂蜜 *fēngmì* 'bee + honey = honey'
N_2 is made of N_1	草鞋 *cǎoxié* 'straw + shoe = straw-shoe'
N_2 denotes a place where N_1 is sold	药店 *yàodiàn* 'medicine/drug + shop = drug-store'
N_2 denotes a disease of N_1	肺病 *fèibìng* 'lung + disease = tuberculosis'
N_1 denotes the time for N_2	东夜 *dōngyè* 'winter + night = winter-night'
N_1 is the source of energy of N_2	电灯 *diàndēng* 'electricity + lamp = electric lamp'
N_1 is a metaphorical description of N_2	龙船 *lóngchuán* 'dragon + boat = dragon boat'

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which survives as a subsystem in modern language: in this system there is no computation, but rather a direct interface between phonology and semantics.

N₂ is a component of N₁	鸡毛 *jīmáo* 'chicken + feather = chicken-feather'
N₂ is a source of N₁	水源 *shuǐyuán* 'water + source = headwaters/ source of water'
N₂ is an employee or an officer of N₁	公司经理 *gōngsī jīnglǐ* 'company + manager = company-manager'
N₁ denotes a proper name for N₂, which may be a location, an organization, an institution or a structure	北京大学 *Běijīng dàxué* 'Beijing + university = Beijing University'
N₂ denotes a person who sells or delivers N₁	盐商 *yánshāng* 'salt + merchant = salt merchant'

Delfitto, Fiorin & Melloni (2007) observe that in Italian, a language where productive endocentric native compounds are left-headed, the same interpretative freedom as in English root compounding is not allowed. For instance, the Italian correspondent of *box car*, i.e. *macchina scatola*, can only refer to a car having the shape of a box, or, possibly, a car having the capacity of a box, i.e. a very small car (which thus resembles a box). In English, a *box car* can be a 'car that carries boxes', 'that resembles a box', 'that serves as a box', etc. (cf. Jackendoff 2009:116).

Delfitto, Fiorin & Melloni (2007) compare English root compounds and Italian nominal compounds using the list of the (most prominent) basic functions or relations for English compounds in Jackendoff (2009:123-124), who tries to identify a set of basic semantic functions that, through recursive application, should be able to give the correct interpretation of a compound as a result.

They observe that a great part of the functions available for English are not available for Italian. In table 2 we compare English and Italian with Chinese.

Table 2 – Jackendoff's functions in English, Chinese and Italian[24]

FUNCTION	GLOSS	ENGLISH	CHINESE	ITALIAN
CLASSIFY (X₁, Y₂)	'N₁ classifies N₂'	*X-ray*	X 射线 X *shèxiàn* 'X-ray'	*raggi X* 'rays-X'
Y₂ (X₁)	'a N₂ of/by N₁'	*office manager*	办公室主任 *bàngōngshì zhǔrèn* 'office-head'	*capo ufficio* 'head-office'

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[24] We have excluded the function 'Both (X,Y)' (both X and y), since Chinese seems not to have this kind of compounds (e.g. *boy king*) (cf. 1.3.1).

		union member	工会会员 *gōnghuì huìyuán* 'union-member'	*membro del sindacato* 'member of union'
		hairstyle	发型 *fàxíng* 'hair-style'	**stile capelli* 'style hair' (cf. *acconciatura*)
		sea level	海平面 *hǎipíngmiàn* 'sea-surface'	*livello del mare* 'level of–the sea'[25]
SAME/SIMILAR (X_1, Y_2)	'N$_1$ and N$_2$ are same/similar'	*zebrafish*	斑马鱼 *bānmǎyú* 'zebra-fish'	*pesce zebra* 'fish zebra'
KIND (X_1, Y_2)	'N$_1$ is a kind of N$_2$'	*pine tree*	松树 *sōngshù* 'pine-tree'	**albero pino* 'tree pine' (cf. *pino* 'pine')
SERVES-AS (Y_2, X_1)	'N$_2$ serves as N$_1$'	*handlebar*	把手 *bǎshou* 'handle-hand'	*barra di appoggio* 'handle for support'
		farmland	耕地 *gēngdì* 'plough-land (cultivated land)'	*terreno agricolo* 'land agricultural'
		buffer state	缓冲国 *huǎnchōngguó* 'buffer-state'	*stato cuscinetto* 'state buffer'
PART (X_1, Y_2)	'N$_2$ is part of N$_1$'/ 'N$_2$ with N$_1$ as a part'/ 'N$_2$ is composed in part of N$_1$'	*apple pie*	苹果派 *píngguǒpài* 'apple-pie'	*torta di mele* 'cake of apples'
		doorknob	门柄 *ménbǐng* 'door-handle'	*maniglia della porta* 'knob of-the door'
		ham sandwich	火腿三明治 *huǒtuǐ sānmíngzhì* 'ham-sandwich'	*panino al prosciutto* 'sandwich with ham'
		city centre	市中心 *shìzhōngxīn* 'city-centre'	*centro città* 'city centre'[26]

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[25] Possessive relations are usually excluded as compounds in Italian (cf. Delfitto, Fiorin & Melloni 2007) .

[26] In Italian this function only admits with a very limited set of locative/temporal heads (cf. Delfitto, Fiorin & Melloni 2007).

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$LOC_{temp}(X_1, Y_2)$	'N$_2$ takes place at time N$_1$'	*spring rain*	春雨 *chūnyǔ* 'spring-rain'	*pioggia primaverile* 'rain spring$_{Adj}$'
		tree house	树屋 *shùwū* 'tree-house'	*casa sull'albero* 'house on-the tree'
$LOC(X_1, Y_2)$	'N$_2$ is located at/in/on N$_1$'	*floor tile*	地砖 *dìzhuān* 'earth/base + brick = floor tile'	**piastrella/mattonella pavimento* 'tile floor' (cf. *mattonella*)
$CAUSE(X_1, Y_2)$	'N$_2$ caused by N$_1$'	*knife wound*	刀伤 *dāoshāng* 'knife-wound'	*ferita da coltello* 'wound from knife'
		car accident	车祸 *chēhuò* 'vehicle-misfortune'	*incidente di macchina* 'accident of car'
$COMP(Y_2, X_1)$	'N$_2$ is composed of N$_1$'	*rubber band*	橡皮筋 *xiàngpíjīn* 'rubber-band'	**fascia gomma* 'band rubber' (cf. *elastico*)
		rag doll	布娃娃 *bùwáwa* 'cloth-doll'	*bambola di pezza* 'doll of rag'
MAKE (X,Y, FROM Z) 'X makes Y from Z'	'N$_2$ made by N$_1$' 'N$_2$ made from N$_1$'	*moonbeam*	月光 *yuèguāng* 'moon + ray'	*raggio di luna* 'beam of ray'
		footprint	脚印 *jiǎoyìn* 'foot + print'	*impronta di piede* 'print of foot'
		olive oil	橄榄油 *gǎnlǎnyóu* 'olive + oil'	*olio d'oliva* 'oil of olive'
PROTECT (X,Y, FROM Z) 'X protects Y from Z'	'N$_2$ protects N$_1$' 'N$_2$ protects from N$_1$'	*sunglasses*	太阳镜 *tàiyángjìng* 'sun-lens/glass'	*occhiali da sole* 'glasses for sun'
		life boat	救生船 *jiùshēngchuán* 'life-saving boat'	*scialuppa di salvataggio* 'boat of saving'

Table 2 shows that many of the functions proposed by Jackendoff (2009) in Italian cannot be expressed through compounding, but only through a phrasal expression, including adjectival modification. In contrast, Chinese behaves almost like English and seems to be able to express all the functions through compounding.

Moreover, in Chinese a certain degree of arbitrariness in interpretation is also found in nominal compounds where the non-head is a verb. Some examples of [V+N]$_N$ compounds are given in (18):

(18) a. 睡袋 *shuìdài* 'sleep + bag = sleeping bag'
      b. 跑道 *pǎodào* 'run + road = runway'
      c. 滚梯 *gǔntī* 'roll + steps = escalator'
      d. 驾龄 *jiàlíng* 'drive + years = number of years of experience or service as car driver, airplane pilot, etc.'
      e. 卖场 *màicháng* 'sell + large place where people gather for a specific purpose = big marketplace for selling commodities'

Summing up, Chinese nominal compounds are invariably right-headed (setting apart coordinate compounds) and, as in English, show freedom of interpretation, i.e. the two constituent of a compound can be interpreted according to a number of logical possibilities.

1.3.4 Verbal compounding in Mandarin Chinese

While, as we have seen in the previous section, Chinese seems to have a canonical position for the head in nominal compounding (setting apart coordinate compounds), the same does not hold for verbal compounding: Chinese forms both verbal right-headed compounds (attributive compounds) and left-headed compounds (subordinate compounds) (cf. 1.3.2). For example, Chinese has both [V N]$_V$ and [N V]$_V$ compounds (cf. 1.3.1); in such structures, the position of the head is easy to identify through the lexical category of the output; in fact, the whole compound is a verb, thus the verbal constituent should act as the head: [V N]$_V$ compounds are left-headed, while [N V]$_V$ compounds are right-headed. We will not take into account verb-object [V N]$_V$ compounds, since they represent a rather complicated issue (cf. 1.3.1 and fn.20). We just want to stress the fact that in these forms the noun is apparently subcategorized by the verb (the kind of Ns allowed in these constructions are only those that can be possible internal arguments of the verb), even though, at a closer look, at least for some verb-object compounds the noun is not an internal argument, as the possibility of adding another object clearly shows. In any case, the verb and the noun can only be interpreted according to a 'verb-argument' relation, other possibilities are ruled out.

In contrast, [N V]ᵥ compounds represent right-headed compounds, where N acts as a modifier and the two constituents show more freedom of interpretation, as shown by the examples in (19).

(19)   a. 口算 *kǒusuàn* 'mouth + calculate = do a sum orally'
        b. 笔伐 *bǐfá* 'writing brush + attack = condemn or denounce in writing'
        c. 粉刷 *fěnshuā* 'powder + brush = whitewash'
        d. 函售 *hánshòu* 'letter + sell = sell by mail'
        e. 飙升 *biāoshēng* 'whirlwind + rise = (of price, quantities) rise rapidly/soar'
        f. 雪藏 *xuěcáng* 'snow + hide/conceal/store in = refrigerate/ keep in a refrigerator'

Right-headedness is again associated with a relative degree of arbitrariness in interpretation. The most striking issue in Chinese verbal compounding, however, is represented by [V V]ᵥ compounds, which, as we have seen, can be either right-headed or left-headed. In this kind of compounds headedness cannot be determined on the basis of lexical categories, since both the constituents are verbal roots. In what follows, we provide an overview of [V V]ᵥ compounds.

1.3.4.1 [V V] compounds

According to the relationship between the constituents of the compound, [V V]ᵥ compounds can be divided into verb-complement (subordinate), modifier-head (attributive) and coordinate (cf. Hong, Li & Huang 1998; Chen C. 2008; Ceccagno & Basciano 2007), resulting also in differences in headedness (cf. 1.3.1). In coordinate compounds, as we have seen, the constituents are often synonymous, e.g. 攻击 *gōngjī* 'attack + attack = attack', or express events linked by logical coordination ('and'), e.g. 教导 *jiàodǎo* 'teach + guide = instruct/give guidance (teach and guide)'. In attributive (modifier-head) compounds, V_1 acts as the modifier of V_2, which in turn is the head constituent. For many compounds of this type, V_1 often denotes a manner or means of doing the action or activity that V_2 refers to (cf. Chen C. 2008), as 坐待 *zuòdài* 'sit + wait for = wait at ease' and 盗猎 *dàoliè* 'steal + hunt = poach'. Finally, in subordinate (verb-complement) compounds, V_2 acts as the complement of V_1. In many compounds of this type, V_2 represents the result of the activity denoted by V_1 (i.e. they are resultative compounds; cf. chapters 5 and 6), such as 杀死 *shāsǐ* 'kill + die = kill' or 喝醉 *hēzuì* 'drink + drunk = get drunk'. However, as we have seen, other

kinds of subordinate [V V]ᵥ compounds exist as well, as for example those termed 'serial verb' type or 'double complement' type compounds (cf. 1.3.1).

The prediction of the syntactic and semantic relation between the two constituents of [V V] compound represents a very challenging topic of research, also because compound verbs lack overt relational markers (cf. Chan, Chen & Huang 2000; Chang & Chen 1999, among others).

Interestingly, the same kind of ambiguity can be found in syntax, in the so-called 'serial verb constructions', where a sequence of verbs or verbal phrases without coordinating or subordinating markers becomes so complex and scarcely transparent that it often leads to interpretative errors (cf. Wang 2007). It is probably these parallels that have led some authors to regard some kind of [V V]ᵥ compounds as serial verb type compounds. Before illustrating the characteristics and parallels between verbal compounds and serial verb constructions, we make a brief remark on the parallels found between compounds and phrases in Chinese.

As we have mentioned, Anderson (1985) observes that sometimes the same sequence of items may correspond either to a phrase or to a compound. Moreover, Huang (1998:276) points out that in Chinese heads are ambiguous in phrasal syntax in ways that have not been sufficiently appreciated. Mandarin Chinese is a (S)VO language, but has left-branching noun phrases (modifier-modified, adjective-noun, etc.) and adjuncts are usually found on the left[27].

The order of the constituents in Chinese compounding seems to mirror syntax: nominal phrases are invariably right-headed, while verbal compounds can be either right-headed or left-headed (we will return to this issue in the next section). This can lead to difficulties in distinguishing clearly compounds from phrases. In the nominal domain, the presence of the marker 的 *de*, which is required in noun modification, makes things easier: despite nominal compounds and noun phrases share the same order of constituents, nevertheless only phrases require the overt presence of the marker 的 *de*, e.g. 我认识的人 *wǒ rènshi de rén* 'I know DE person = The people I

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[27] Mandarin Chinese is a (S)VO language but manifests many of the characteristics found in SOV languages: relative clauses and the possessor come before the noun (Relative Clause-Nome, Possessive-Noun). Aspect markers follow the verb; adverbs are generally placed before the verb; the prepositional phrase is placed before the verb. Moreover, it should be noted that prepositional phrases do not always precede the verb: temporal phrases tend to be placed before the verb if they express punctuality or after the verb if they express durativity. Locative phrases tend to appear before the verb if they indicate the place in which an action is performed, while tend to appear after the verb if they indicate the position of a person or an object as a result of an action (cf. also Sybesma 1992). For more typological characteristics of Chinese, cf. Li & Thompson (1981: 24).

know', 老师的书 *lǎoshī de shū* 'teacher DE book = the book of the teacher'[28].

Therefore, in principle if two nouns (or a verb and a noun) are merged without the presence of the aspect marker 的 *de*, then they form a compound[29]. In contrast, in the verbal domain things are more difficult, since sequences of verbs or verb phrases can be linked without any overt marker signalling the kind of relation they share[30], as we will see in greater detail in the next section. In these cases, other criteria should be applied to distinguish compounds from syntactic structures, e.g. inseparability/irreversibility of the constituents, position of aspect markers, etc. This parallel between compounding and syntactic structures has led many scholars to adopt the approach based on the syntactic relations between the constituents to classify compounds (cf.1.3.1), and to add 'serial verb type' compounds to the types traditionally recognized.

1.3.4.2 Verbal [V V]$_v$ compounds and serial verb constructions

According to Hong (2004), [V V]$_v$ compounds of the serial verb type are those where the two constituents are arranged according to a temporal (first V$_1$ then V$_2$) or to a logical sequence, e.g. 盗卖 *dàomài* 'steal + sell = steal and sell (public property)', 栽培 *zāipéi* 'plant + foster = cultivate', 裁缝 *cáiféng* 'cut + sew = cut cloth and sew', in the same way as syntactic serial verb constructions. Hong (2004:57) assumes that many serial verb type compounds in Modern Chinese were actually serial verb constructions in Old Chinese. Given these observations, it is necessary to have a better understanding of what Hong (2004) means by "serial verb constructions" and

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[28] Exceptions to this requirement are often found when the modifier is a pronoun and the relation between the modifier and the modified is one of inalienable possession, e.g. 我妈妈 *wǒ māma* 'I mother = my mother', 我眼睛 *wǒ yǎnjīng* 'I eye = my eyes' (e.g. Chao 1968, Li & Thompson 1981). However, Chappell & Thompson (1992) highlight that discourse data show that exceptions can be found in both directions, i.e. some prototypical inalienable nouns occur with the marker 的 *de* and some alienably possessed nouns occur without 的 *de*. Chappell & Thompson, as a result of their analysis based on a large set of spoken and written data, conclude that 1) the closer the relationship between NP$_1$ and NP$_2$, the less likely the marker 的 *de* is to be used; 2) the closer the relationship between NP$_1$ and the speaker, the less likely the the marker 的 *de* is to be used (cf. Chappell & Thompson 1992:220). Following Haiman (1983, 1985), Chappell & Thompson observe that this proposal reflects converging economic and iconic motivation. Moreover, note that in adjectival modification the marker 的 *de* is not always required (cf. 4.3.1).

[29] Note, however, that even relative clauses may sometimes drop the marker 的 *de* (Lisa Cheng, p.c.).

[30] The same is true for verb-object compounds which mirror the VO order; this makes even more difficult to distinguish verb-object compounds from verb-object phrases (cf. fn.20).

by "serial verb type compounds"; firstly, we briefly illustrate what is considered to be a serial verb construction in the literature.

1.3.4.2.1 The serial verb construction

Serial verb constructions are generally considered to be sequences of verbs which act together as a single predicate, without any overt marker of coordination, subordination, or syntactic dependency of any sort (cf. Aikhenvald 2006)[31]. They show semantic and functional similarities to multiclausal and subordinating constructions in non-serializing languages. Serial verb construction are conceptualized as a single event[32], they are monoclausal: their intonational properties are the same as those of a monoverbal clause, and they have just one tense, aspect and polarity value; the verbs which compose a serial verb construction can also share arguments[33]. Moreover, each component of a serial verb construction must be able to occur on its own. Finally, the components of a serial verb construction may have the same, or different, transitivity values. Serial verb constructions may be found, for instance, in Sranan (an English-based creole language of Suriname; Baker 1989), as in *Kofi naki Amba kiri* 'Kofi struck Amba dead', lit. 'Kofi hit Amba kill', where one verb describes the effect of the other.

According to Aikhenvald (2006), there are two kinds of serial verb constructions:

1) Symmetrical, which consists of a sequence of two or more verbs, each chosen from a semantically and grammatically unrestricted class. In these constructions, the order of the verb constituents tends to be iconic, reflecting the temporal sequence of the subevents; they are regarded as headless

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[31] This definition consolidates the existing terminological consensus (cf. Foley & Olson 1985, Givón 1991, Durie 1997, Crowley 1987, Zwicky 1990, among others).

[32] As stated in Aikhenvald (2006), semantically serial verb constructions can describe: one event; several subevents closely linked together; several subevents in sequence conceptualized as connected to each other. These last ones are difficult to distinguish from a sequence of clauses. However, it is very difficult to state what counts as a single event; often what is conceived as a single event in a language corresponds to different events in another one. Durie (1997) states that the conception of a single event is very culture-based: for example, in White Hmong (one language among the group of dialects of the Hmong-Mien/Miao-Yao language family spoken by the Hmong people of Sichuan, Yunnan, Guizhou, Guangxi, northern Vietnam, Thailand, and Laos), the action of playing the pipes and dancing are inseparable, thus playing and dancing are considered as one single event (p. 329).

[33] It should be noted that for some authors argument sharing is a defining property of serial verb constructions. For example, Baker (1989:513) defines serial verb constructions as "constructions in which a sequence of verbs appears in what seems to be a single clause". Usually, there is only one tense/aspect specification for the whole chain of verbs; the verbs have a single structural subject and share logical arguments (Baker 1989). Based on African languages, Baker proposes that a SVC is a double-headed structure, in which two heads (verbs) share an internal argument (object). Collins (1997) chooses sharing of the internal argument as the crucial criterion for serial verb constructions.

constructions since all of their components have equal status and none of them determines the semantic or syntactic properties of the construction as a whole. These constructions often get lexicalized and become idiom-like.

2) Asymmetrical, which includes a verb from a grammatically or semantically closed class (e.g. a motion or a posture verb). In this kind of constructions, the order of the verbs is not iconic and they tend to grammaticalize into tense or aspect markers[34]. For example, verbs from a restricted class tend to become affixes, sometimes retaining their verbal properties. For instance, the instrumental marker in Tetun Dili (an Austronesian language) is ambiguous: it behaves as a preposition after the main verb, but as verb before it.

Languages that show serial verb constructions are Creole languages, languages from West Africa, South-east Asia, Amazonia, Oceania, New Guinea. However, Paul (2008) points out that serial verb constructions are not cross-linguistically comparable, since different serializing languages present different types of serial constructions (this point was already highlighted by Baker 1989). Paul claims that serial verb constructions behave differently in different languages with respect to coordination, embedded clauses, or adjectival predicates (small clauses). We now provide a brief overview of what is generally considered to be a serial verb construction in Chinese.

1.3.4.2.2 Serial verb constructions in Chinese

In this section we try to provide an overview of the different kinds of constructions recognized under the label of 'serial verbs' in Chinese. It is beyond the scope of this thesis to summarize the great amount of literature on the topic; we have decided to base the description of serial verb constructions mainly on the works of Li and Thompson (1973, 1978, 1981), who consider many different types of serial verb constructions. Li and Thompson (1978, 1981) propose that the serial verb construction in Chinese is one of the consequences of the lack of grammatical morphology. They define a serial verb construction as "a sentence that contains two or more verb phrases or clauses juxtaposed without any marker indicating what the relationship is between them." (Li and Thompson, 1981:594). Therefore, in Chinese

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[34] According to some authors, Chinese aspectual markers apparently have developed from serial verb constructions (cf. Shi 2002).

there are many sentences with the same form, but with different interpretations, i.e. (NP) V (NP) (NP) V (NP) (the NPs in parentheses are optional).

According to Li and Thompson (1981:594), serial verb constructions can be divided, according to the interpretation they are given, into four types:

1) Two or more separate events
2) One verb phrase or clause serving as the subject or direct object of another verb
3) Pivotal constructions
4) Descriptive clauses

The first group of serial verb constructions can be divided into the four subtypes exemplified in (20) (examples adapted from Li & Thompson 1981:595 and 597):

(20) a. **Consecutive**: one event occurs after the other.
      我   买   票   进去。
      wǒ   mǎi   piào   jìnqù
      I   buy   ticket   enter-go
      'I bought a ticket and went in.'
   b. **Purpose**: the first event is done for the purpose of achieving the second one
      我们   开会   讨论   那   个   问题。
      wǒmen   kāihuì   tǎolùn   nà   ge   wèntí
      we   hold-meeting consider   that CL   problem
      'We hold a meeting to consider that problem.'
   c. **Alternating**: the subject alternates between two actions.
      他   天天   唱歌   写   信。
      tā   tiāntiān   chànggē   xiě   xìn
      he   everyday   sing song   write   letter
      'Everyday he sing songs and write letters.'
   d. **Circumstance**: the first verb phrase describes the circumstances under which the event in the second verb phrase or clause occurs.
      他们   用   手   吃饭。
      tāmen   yòng   shǒu   chīfàn
      they   use   hand   eat
      'They eat with their hands.'

The second group of serial verb constructions, i.e. those in which one verb phrase/clause is the direct object or the subject of another, are of the type of the examples in (21), adapted from Li & Thompson (1981:600 and 603):

(21) a. 我们   禁止   抽烟
      wǒmen   jìnzhǐ   chōuyān
      we   prohibit   smoke
      'We prohibit smoking.'

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b.
大声		念	课文	可以	帮助		发音。
dàshēng		*niàn*	*kèwén*	*kěyǐ*	*bāngzhù*		*fāyīn*
big voice		read	lesson	can	help		pronunciation

'Reading the lesson aloud can help pronunciation.'

The main characteristic of the constructions in the third group, i.e. 'pivotal' constructions, is that they contain a noun phrase that is simultaneously the external argument of the second verb and the internal argument of the first verb (which are generally called 'control structures'), as in the example in (22), adapted from Li & Thompson (1981:607).

(22)
我	劝	他	念	医。
wǒ	*quàn*	*tā*	*niàn*	*yī*
I	advise	he	study	medicine

'I advised him to study medicine.'

Lastly, Li & Thompson (1981) describe a fourth group of serial verb constructions, i.e. 'descriptive clauses'. Descriptive clauses are defined as those constructions which involve "a transitive verb whose direct object is "described" by a following clause" (p.611), as in (23), adapted from Li & Thompson (1981:611 and 618).

(23) a.
他	有	一	个	妹妹	很	喜欢	看	电影。
tā	*yǒu*	*yī*	*ge*	*mèimei*	*hěn*	*xǐhuan*	*kàn*	*diànyǐng*
he	have	one	CL	sister	very	like	see	film

'He has a young sister who likes to see movies.'

b.
我们	种	那	种	菜		吃。
wǒmen	*zhòng*	*nà*	*zhǒng*	*cài*		*chī*
we	raise	that	kind	vegetable		eat

'We raise that kind of vegetable to eat.'

Therefore, the label 'serial verb constructions' covers many different kinds of sentences sharing the superficial form, i.e. two or more verb phrases or clauses juxtaposed without any marker. For a more detailed description, see Li & Thompson (1981).

1.3.4.2.3 Serial verb type compounds

After a brief description of the possible types of sentences which can fall under the label of 'serial verb construction', we now try to show the parallels between these syntactic constructions and [V V]ᵥ compounds.

Hong (2004), as we have seen (1.3.4.2), points out that the fundamental requirement for a [V V]_V compound to be considered a serial verb type compound is that the two constituents must be arranged according to a temporal sequence or a logical sequence. Therefore, according to this definition, serial verb compounds should be considered to be those like 攻占 *gōngzhàn* 'attack + occupy = attack and occupy', 裁缝 *cáiféng* 'cut + sew = cut cloth and sew', 栽培 *zāipéi* 'plant + foster = cultivate', which seem to correspond to what Li & Thompson (1981) term 'consecutive' serial verb constructions, where one event occurs after the other (20a). However, Hong (2004) points out that there are other kinds of serial verb compounds as well. For example, this author observes that there are some [V V]_V compounds which are ambiguous between being of the modifier-modified type (偏正式 *piānzhèng shì*) or of the serial verb type, like those in (24), from Hong (2004:60).

(24)   a. 追捕 *zhuībǔ* 'pursue + catch = pursue and capture'
       b. 走访 *zǒufǎng* 'go/walk + visit/seek by inquiry = interview/have an
          interview with'
       c. 租用 *zūyòng* 'rent + use = rent (for use)'

In these compounds, V₁ expresses the way in which V₂ is performed or an 'adjunct condition' (伴随状态 *bànsuí zhuàngtài*)，therefore they should be considered as compounds of the modifier-modified type. However, Hong (2004) considers them as serial verb type compounds; according to this author, these verbs have two characteristics: 1) V₁ expresses the way in which V₂ is performed; 2) the two verbal roots are arranged in temporal sequence 'first V₁ then V₂'. For example, Hong observes that in a verb like 追捕 *zhuībǔ* 'pursue and capture', 追 *zhuī* 'pursue' express the manner of 捕 *bǔ* 'catch'; nevertheless, the action expressed by 追 *zhuī* 'pursue' also happens before that of 捕 *bǔ* 'catch', thus is formed following a serial verb construction style. Therefore, a compound like 追捕 *zhuībǔ* 'pursue and capture' is characterized both by having a modificational structure and by having its constituents arranged in a temporal sequence. For this reason, Hong (2004) considers this kind of compounds of the serial verb type.

However, Hong (2004) observes that among this kind of compounds there are some problematic cases. For example, a compound like 游牧 *yóumù* 'travel/rove around + herd = live a nomadic life/move around in search of pasture' does not pose

problems for the modificational interpretation. However, the two verbal roots can be also seen either as expressing parallel actions, i.e. 'travel' and 'tend', or as expressing actions occurring in temporal sequence, first 'travel' and then 'herd' (cf. Hong 2004:60). According to Hong, modifier-modified [V V]$_V$ compounds are characterized only by having a modificational structure; when the constituents are in a modifier-modified relation and are also arranged in temporal sequence, the compound is of the serial verb type. Apparently, [V V]$_V$ compounds in which the constituents share a modifier-modified relation can be considered as the parallel of serial verb constructions of the 'circumstance' type (20d), where the first verb phrase describes the circumstances under which the event expressed by the second verb phrase or clause occurs, e.g. 骑车上学 *qíchē shàngxué* 'ride-bicycle attend-school = to go to school by bicycle'. In this sense, compounds like 蹿升 *cuān shēng* 'leap up + rise = climb sharply/rise quickly', 品读 *pǐndú* 'decide with discrimination + read = read carefully; ponder on', 跃增 *yuèzēng* 'leap/jump + increase/add = grow by leaps' can be considered as parallel to 'circumstance' serial verb construction type.

Moreover, Hong (2004) considers compounds where V$_2$ is governed by V$_1$ (thus, the two constituents are in a subordinate relation), e.g. 谋害 *móuhài* 'seek + harm/kill = plot to murder' or 谋杀 *móushā* 'seek + kill = kill'; V$_2$ expresses the content of V$_1$ (cf. Hong 2004:60). Hong observes that the constituents of these verbs too share a temporal sequence according to which the action expressed by the first verb happens before the action expressed by the second verb. However, Hong considers these compounds as belonging to the subordinate type (支配式 *zhīpèishì*) or verbal complement type (动宾式 *dòngbīnshì*) and not to the serial verb type, because some kinds of verbs (or verbal morphemes) require a verb (or verbal morpheme) complement. Apparently, some V$_1$s can contribute to form both serial verb type compounds and subordinate type compounds. Hong distinguishes between verbs like 签到 *qiāndào* 'sign + arrive = sign in/register one's attending at a meeting or at an office' and verbs like 签发 *qiānfā* 'sign + deliver = sign and issue'; according to the author, only verbs of the latter type are serial verb compounds, while those of the first type are of the subordinate type. However, considering Li & Thompson's taxonomy of resultative constructions, this kind of compounds can be considered as the parallel of purpose serial verb constructions (20b), where the event expressed by

the first verb (or verb phrase) is performed to achieve the event designated by the second verb.

Moreover, Hong (2004:60) considers the case of compounds of the resultative type, e.g. 打倒 *dǎdǎo* 'hit-fall down = overthrow', 推翻 *tuīfān* 'push-turn over/slanting down = overturn'. Hong claims that, despite the fact that the two verb constituents are in a temporal sequence, V_1 happens after V_2, nevertheless the relation between them is much more complicated than that found in the serial verb compounds type: according to Hong, the V_2 of a resultative compound expresses either a result, a direction or a degree. Therefore, Hong sets resultative compounds apart from serial verb type compounds[35].

Lastly, Hong (2004) sets apart $[V\ V]_V$ compounds where the two constituents are synonyms (or near-synonyms), i.e. coordinate compounds (cf. 1.3.1), from serial verb type compounds. It seems that in Chinese at least the juxtaposition of two synonymous elements has become a productive pattern of word formation. Examples of verbal compounds built on synonymous constituents in Chinese are: 栽种 *zāizhòng* 'plant + plant = plant'; 盗窃 *dàoqiè* 'steal + steal = steal'; 选择 *xuǎnzé* 'choose + choose = choose'. Wang (1987:304-306) estimates that about 70 to 80 percent of all polysyllabic words in Chinese consist of synonymous elements. Steffen Chung (2006) asserts that the reason for building this kind of compounds is disyllabicity, almost as an end in itself. According to Hong (2004), compounds formed with synonymous (or near synonymous) constituents are not serial verb type compounds, since the constituents do not share a temporal relation.

However, apparently also compounds formed with synonymic constituents can be seen as parallel to serial verb constructions. In fact, synonymic serialization seems to be attested cross-linguistically (cf. Durie 1997): it consists of a sequence of verbs closely related in meaning, usually near-synonyms, but also sometimes antonyms, with identical argument structure; they are neither ordered causally nor temporally (Khmer is a language that has this kind of constructions).

The kinds of serial verb type compounds identified by Hong (2004) reflect subtypes of the first type of serial verbs constructions singled out by Li & Thompson (1981), i.e. two or more separate events (see 1.3.4.2.2 above), in particular the

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[35] Actually resultative compounds too have a corresponding syntactic structure, i.e. the resultative phrase, marked by means of the morpheme 得 *de*, which is placed after the first verb (cf. chapter 5, fn. 14). We discuss resultative compounds in chapters 5 and 6.

'consecutive', 'purpose' and 'circumstance' type, even though Hong does not consider those compounds where the constituents share a relation similar to that found in purpose serial verb constructions as instances of serial verb type compounds. However, other types of [V V]$_V$ compounds which parallel other types of serial verb constructions illustrated by Li & Thompson (1981) can also be found. For example, as we have seen, some authors recognize the existence of compounds of the 'double complement' type (cf. Yi 2007, Chen 2007, among others), such as 劝退 *quàntuì* 'advise + quit = persuade somebody to quit'; 请教 *qǐngjiào* 'request/ask + teach/instruct = ask for advice/consult'. This kind of compounds seems to parallel the so-called 'pivotal constructions' (cf. Li & Thompson 1981), where a noun phrase is at the same time the external argument of V$_2$ and the internal argument of V$_1$ (22).

Moreover, there is a group of verbal compounds where V$_2$ seems to be subcategorized for by V$_1$, such as: 禁贴 *jìntiē* 'forbid the posting of something'; 拒载 *jùzài* 'refuse + carry = (of a taxi driver) refuse to take a passenger'; 起飞 *qǐfēi* 'rise/begin + fly = (of an aircraft) take off'. These compounds seem to be parallel to those serial verb constructions in which one verb phrase/clause is the direct object of the other (21).

Therefore, if we apply the label 'serial verb type' compounds to those [V V]$_V$ compounds that are superficially similar and share the same relations as those found in serial verbs constructions, almost any type of [V V]$_V$ compound could be seen as a serial verb type compound, the only exception being resultative compounds.

1.3.4.2.4 Is there any real serial verb construction/serial verb type compound?

From the description of the serial verb construction in 1.3.4.2.2, it should be clear that in Chinese the label 'serial verb construction' refers to a number of different constructions, i.e. any surface string with more than one verb having no overt markers of coordination or subordination. Therefore, 'serial verb construction' in Chinese does not indicate a single structure with a predictable set of properties, but different constructions with their specific properties (cf. Paul 2008). This is why there is no clear consensus in the literature on what a serial verb construction is in Chinese: different authors (e.g. Zhu 1982, Li 1986, Chang 1990, Dai 1990, Wang 2007, Paul 2008) seem to hold different views about what kind of verb sequences can be labeled as serial verb constructions, since under this label one can put different kind of

subordinate or coordinate structures, which in Chinese do not require any overt marker, as said above[36]. Furthermore, due to the lack of markers signalling the relation between sequence of verbs or verb phrases, a sequence of verbs can sometimes generate different interpretations and thus be ambiguous. Consider the example in (25):

(25)　我　　种　　菜　　　　卖　　菜。
　　　wǒ　zhǒng cài　　　mài　cài
　　　I　　grow　vegetables　sell　vegetables
　　　a. 'I grow and sell vegetables.'
　　　b. 'I grow vegetables in order to sell them.'[37]

As highlighted by Wang (2007), this sentence potentially has two readings. One reading indicates that two events, 种菜 *zhǒng cài* 'grow plants' and 卖菜 *mài cài* 'sell plants', are independent and coordinate, i.e. 'I grow vegetables and sell vegetables', and therefore the sentence value does not change if we invert the order of the two events, i.e. 'I sell vegetables and grow vegetables' (25a). This reading would be an instance of what Li & Thompson (1981) term consecutive serial verb construction (20a). In the other reading, the two verbs have a subordinate relation; in this case the interpretation is: 'I grow vegetables in order to sell them' (25b). The event of 卖菜 *mài cài* 'sell plants' depends on the preceding event of 种菜 *zhǒng cài* 'grow plants', i.e. the two events cannot be inverted; in this reading the sentence would be an instance of what Li & Thompsom (1981) term purpose serial verb construction (20b).

Li and Thompson (1973) propose that the ambiguity and the different interpretations found in serial verb constructions depend on world's knowledge rather than on linguistic knowledge. They claim that different kinds of serial verb

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[36] For example, Zhu (1982) does not consider coordinate constructions as serial verb constructions, but include among serial verb constructions sentences with preverbal adjunct PPs, not considered in Li & Thompson (1981), and subject and object control structures (i.e. pivotal constructions). Li (1986) excludes coordinate constructions and control constructions from serial verb constructions (cf. Paul 2008:383-384).

[37] Wang (2007) follows the definition of 'serial verb construction' provided by Chang (1990): structures in which verbs in a series hold a temporal dependency relation and share a common noun phrase. Chang's analysis suggests that Chinese serial verb constructions undergo the deletion of a redundant NP2 following V_2 for the sake of economy. Accordingly, Wang (2007) consider only the following type as a real instance of seral verb constructions (example from Wang 2007:3):

我　　种　　菜　　　　卖　　了。
wǒ　zhǒng cài　　　mài　le
I　　plant　vegetables　sell　ASP
'I plant vegetables to sell'

constructions are structurally distinct: consecutive and alternating actions have a coordinate structure, while the purpose clause interpretation has a subordinate structure. However, Li & Thompson think that the interpretation depends entirely on inferences that the hearer makes. This is particularly true for the first type of serial verb constructions they describe, i.e. 'two or more separate events', which they divide into consecutive, purpose, alternating and circumstance (cf. 20).

According to Paul (2008), the multiple ambiguity highlighted by Li & Thompson does exist but only to a certain extent; sentences characterized by a simple juxtaposition of verbal phrases, without overt marking indicating the relation between the two phrases, do not lead to coordinate structures[38], i.e. to an interpretation in term of simultaneous alternative or consecutive actions (cf. Chen 1993 among others). Generally speaking, a sequence of two verbal phrases without any markers would be analysed by default either as a structure involving adjunction, where the first verbal phrase is an adjunct of the second (main) predicate, forming a single event (26a), or as a purposive clause, where the second VP represents a purpose clause whose covert subject is controlled by the matrix subject (26b) (cf. Paul 2008:387-388).

(26)　他　　打电话　　　　叫　车。
　　　tā　　*dǎ-diànhuà*　　*jiào*　*chē*
　　　he　　hit-phone　　　call　car
　　　a. 'He called a taxi by phone'
　　　b. 'He phoned to call a taxi'

A clue to the understanding of the difference between the two structures is represented, for example, by the distribution of the perfective verb particle 了 *le*, which must be placed after the main verb. Therefore, the sentence in (27a) must represent an adjunct structure, the main verb being on the right, while that in (27b) represent a purpose clause, the main verb being on the left (examples are adapted from Paul 2008:374).

(27) a. 他 [VP[adjunct PRO₁ 打电话]　[叫　了 车]] 以后　还　等　了 二十　分钟。
　　　tā　　　　　*dǎ-diànhuà jiào le chē yǐhòu hái děng le èrshí fēnzhōng*
　　　he　　　　　hit phone　call ASP car　after　still wait ASP twenty minute
　　　'After she had called a taxi by phone, she still waited for twenty minutes'

---

[38] This is only possible when there is a slight pause between the two verbal phrases or in the presence of explicit marking, such as adverbs (Chao 1968).

b. 他ᵢ [[vp打　　　了　　　电话　　　一次] [purpose clause PROᵢ 叫　车]]
　　*tā*ᵢ　　*dǎ*　　*le*　　*diànhuà*　*yī-cì*　　　　　　*jiào chē*
　　he　　hit　　ASP　telephone one-time　　　　　call　car
　　'He made a phone call to order a taxi'

According to Paul (2008), the label serial verb construction covers different constructions with completely different properties, and thus this label should be abandoned in Chinese linguistics, at least for the structures which are generally subsumed under it. For example, consider the second group of serial verb constructions singled out by Li & Thompson (1981), i.e. those in which 'One verb clause is the subject or the direct object of another verb' (cf. ex. 21); according to Paul (2008), these two subgroups have different structures, one involving a sentential subject and the other a complement clause subcategorized for by the matrix verb (corresponding to subject and verb phrase), so they should not be lumped together. Paul (2008) observes that the distribution and interpretation of negation as well as the possibility of an overt subject indicate that the sentential subject and the complement clause form a propositional domain independent of the matrix predicate, with a subject different from the matrix subject: "Consequently, the structure with a sentential subject and that with a clausal complement do not even satisfy the loosest of all "criteria" for "SVC-hood", i.e. the uniqueness of the subject within an SVC." (Paul 2008:378).

Moreover, Paul (2008) observes that the third group of serial verb constructions singled out by Li and Thompson (1981), i.e. the 'pivotal' construction (cf. ex. 22), corresponds to the so-called object control constructions, where the matrix object controls the null subject in the embedded nonfinite clause; this type of construction is not typical of Chinese nor of the so-called serializing languages.

The last type of serial verb construction described by Li and Thompson is the 'descriptive clause construction' (cf. ex. 23), which has the form 'S V O XP'; it is seen as involving a (secondary) predication (XP) on the object NP (cf. Huang 1987, Paul 2008).

The discussion above makes clear that it does not make much sense to talk about serial verb constructions. Serial verb construction would be but a superficial label to indicate any sequence of verbs, subsuming a number of different structures (cf. Paul 2008). And this (the presence of different underlying structures) is the reason why in Chinese the so-called serial verb constructions present differences in headedness. In

fact, Matthews (2006), analysing serial verb constructions in Cantonese, observes that this Sinitic language has both serial verb constructions headed by V_1 and serial verb constructions headed by V_2[39], and this does not come as a surprise since Chinese in general has an unusual typological combination of head-initial and head-final constituents. The same could be said of Mandarin Chinese, if we consider the examples discussed above as serial verb constructions.

Therefore, the term serial verb construction does not provide any indication either about the hierarchical relations between the verbs in the sequence or about their syntactic structure (cf. Paul 2008). Looking at things from this perspective, the great majority of Chinese sentences should be considered as serial verb constructions. However, we have shown that the so-called serial verb construction in Chinese presupposes different underlying structures and, therefore, it is just a label to indicate a sequence of verbs where no overt markers occur to signal the relation holding between the constituents; they are just a means to express relations which in other languages may be expressed by other means.

Given the remarks above, apparently it makes no sense to state that in some Chinese verbal compounds the constituents share a serial verb type relation, since there is not such a thing as a serial verb construction, in the sense of a specific type of construction with its own properties (cf. Paul 2008). Superficially, any $[V\ V]_v$ compound can be regarded as a serial verb compound, since it represents a sequence of juxtaposed verbs; nevertheless this is but a surface label. In fact, as we have seen, a compound formed by two verbal roots may have different underlying structures and interpretations. This is the reason why different authors do not agree on what to subsume under the label 'serial verb type compounds'. For example, we have seen that Hong (2004) includes among serial verb type compounds only those in which the constituents are arranged in temporal sequence (cf. 1.3.4.2 and 1.3.4.2.3). The same view is held by other authors (e.g. Yi 2007, Chen X.L. 2007), who nevertheless exclude compounds like 劝退 *quàntuì* 'advise + quit = persuade somebody to quit', which are subsumed under the label of 'double complement' type compounds (兼语型 *jiānyǔxíng*; cf. 1.3.2). Essentially, serial verb type compounds are those corresponding to the first subtype of serial verb constructions identified by Li &

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[39] According to Matthews (2006:76), if V2 is the head of the serial VP, we have a counter-example to the claim that "all serial constructions are to be analysed as right-adjoined structures, i.e. the second predicate is adjoined to the first predicate" (cf. Veenstra 1996:145).

Thompson (1981). In contrast, judging from the data shown, Ceccagno & Basciano (2007) seem to include among serial verb compounds (which are a subgroup of subordinate compounds, cf. 1.3.1) only those corresponding to the serial verb constructions which Li & Thompson (1981) term purpose (20b) and pivotal (22).

However, if we were to consider serial verb type compounds as those modelled after serial verb constructions, then we should assume that almost all [V V]$_v$ compounds, with the exception of resultatives (and possible of those formed with synonymic constituents) are serial verb compounds (cf. 1.3.4.2.3). Nevertheless, as we have seen, this would just be a surface label: [V V]$_v$ compounds have different underlying structures and different interpretations, resulting in differences in headedness, similarly to the so-called serial verb construction in syntax.

1.3.4.3 The interpretation of [V V]$_V$ compounds

As we have mentioned, the prediction of the syntactic and semantic relation between the two constituents of a [V V] compound is a very challenging issue, also because compound verbs lack morphological marking of such relation (cf. Chan, Chen & Huang 2000, Chang & Chen 1999, among others). According to Hong, Li & Huang (1998), Chinese [V V] compounds can be divided into coordinate, modificational and resultatives, according to the eventive relation between the two simplex verbs which combine to form the meaning of the compound. Since the three types have the same morphological structure, they must be differentiated by other means. Huang & Lin (1992) propose an account for the prediction of the argument structure of [V V] compounds based on event templates. Hong, Li & Huang (1998) assume that the ordering of the two verbal roots in a compound verb is determined by their eventive relation and that this eventive relation can be inferred, basing on the conceptual location of each verb.

Another view of the problem is found in Chen C. (2008). Chen C. considers that normally, as we have seen, [V V]$_v$ compounds can be divided into coordinate, modifier-head (attributive) and verb-complement (subordinate), and highlights that, although the categorization criteria for the [V V]$_v$ compounds, which are mainly based on the internal grammatical relationships between the constituents, may seem to be simple, straightforward and therefore widely accepted, different authors can come up with different judgements for ordinary [V V]$_v$ compounds (p. 327). For example, a

compound such as 摇动 *yáodòng* 'shake + move = wave/shake' could be interpreted as 'to shake and to move something' (coordinate), 'to move something by means of shaking' (modifier-head), 'to shake something and end in moving it' (resultative; cf. Tang 1994 and Packard 2000 for the interpretation of this kind of compounds). Chen C. (2008) looks at this problem from the perspective of Construction Grammar[40]: according to Goldberg (1995), a construction can be polysemous, just like ordinary lexical items. Chen C. proposes that the three types of [V V]$_V$ constructions possess different constructional meanings and, since a construction can be polysemous, the three constructional meanings can be viewed as the polysemy of a single construction, i.e. the V-V construction[41]: "Viewing the V-V construction as a polysemous one, the Gestaltist semantic compositionality in a V-V compound involves thus the interaction of three polysemous parts in a V-V compound: the V$_1$, the V$_2$ and the V-V construction itself." (p. 337). Therefore, all the interpretations could be possible and they are often context-driven.

However, some authors have pointed out precise constraints on the possible type of verbal roots that can be combined in compounds of the resultative type (e.g. Gu 1992, Chen J. 2008; this issue will be discussed in chapter 5); this seems to suggest that the interpretation of [V V]$_V$ compounds is not (at least, not always) context driven.

We will try to show that left-headed compounds in Mandarin Chinese have an underlying functional structure which guides the interpretation; the two constituents that form a left-headed compound are the spell-out of different heads in the functional structure and are linked by a causal relation, creating complex events. The constituents of these compounds are not chosen randomly but must possess certain features. Therefore, the difference between left-headed and right-headed verbal compounds in Chinese could be structural in nature, connected with the presence vs. absence of a functional structure[42].

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[40] According to the Construction Grammar approach (Goldberg 1995), a construction possesses its own meaning, which is to be fused with the meanings of its constituent lexical elements to obtain the sentential meaning.

[41] According to Chen C. (2008) such a polysemy viewpoint can be supported by the fact that the three meanings involved are historically related. The three types of the [V V] construction are generally believed to be highly entangled, all as the result of the evolution of the serial verb construction in Chinese (cf. Mei 1991, Jiang 2001, Feng 2002, among others).

[42] Interestingly, Delfitto, Fiorin & Melloni's (2007), observing that compounds in Romance languages (which are left-headed) do not show the same freedom of interpretation as English root compounds (which are right-headed), put forth the hypothesis that left-headed (nominal) compounds in Romance languages have an underlying functional structure which guides the interpretation.

Among left-headed compounds, along with the well studied resultative compounds, there are also some of the compounds which, as we have seen, have been called serial verb type compounds and double complement type compounds. In this thesis, we will analyse some instances of left-headed compounds adopting the framework put forth by Ramchand (2008), which consists in a syntactic decomposition of the event structure. In the next section we introduce the framework and its application to Chinese verbal roots.

1.4 Introducing the framework: a 'first phase syntax'

Many proposals have been made in the literature to connect the morphosyntax and the semantics of the event structure in an intimate way (cf. Jackendoff 1990, Grimshaw 1990, Travis 2000, Lin 2004, Borer 2005, among others). The common idea behind these proposals is that the syntactic projection of arguments is based on event structure. Ramchand (2008) proposes a model where the events are decomposed in syntax, what she calls 'first phase syntax' (cf. also Butt & Ramchand 2005). As proposed in some lexicalist frameworks (e.g. Rappaport Hovav & Levin 1998[43]), the event would be composed by a structural meaning and an idiosyncratic meaning, given by the lexical-encyclopedical content of the verb. In this framework the structural meaning is built compositionally from syntax and it includes only those aspects of meaning that are predictable and systematic, excluding many of the aspects that are traditionally included in the description of verbs, as theta roles and some kinds of semantic selection. The grammatically relevant aspects, according to this model, come from the interpretation of the syntactic structures in which verbs are inserted. However, if this approach departs from lexicalist approaches, it is also somehow different from constructionist approaches, since it posits that lexical items are provided of minimal syntactic information which allows them to be inserted in the syntactic structures.

Ramchand (2008) posits that the syntax of the event structure contains three important components: the causing subevent, the process subevent and the subevent corresponding to the resulting state. Each of these sub-events is represented with its own projection, ordered in a hierarchical embedding relation, as shown in (28):

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[43] According to Rappaport Hovav & Levin (1998), the meaning of a predicate is composed of two components: the structural component ('event structure template'), which is the grammatically relevant component, and the idiosyncratic component ('constant' or 'root').

(28)

```
        initP (causing projection)
       /    \
     DP₃     \
  subj of    init    procP (process projection)
  'cause'           /    \
              DP₂    \
           subj of   proc    resP (result projection)
           'process'        /    \
                       DP₁    \
                    subj of   res    XP
                    'result'          △
```

(28) $init$P (causing projection) — DP$_3$ subj of 'cause', $init$, $proc$P (process projection) — DP$_2$ subj of 'process', $proc$, resP (result projection) — DP$_1$ subj of 'result', res, XP
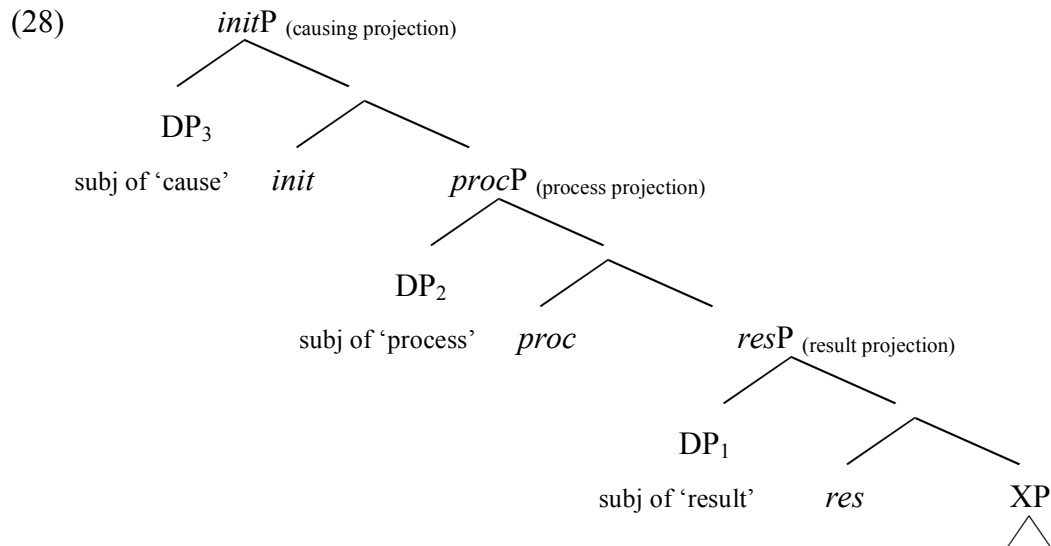
This kind of structure, besides representing the complexity of an event, which can be decomposed to a maximum of three subevents, also limits and captures the set of core argument roles, as defined by the predicational relations formed at each level. Each projection forms its own core predicational structure: the specifier position is filled by the 'subject' or 'theme' of a particular subevent, while the complement position is filled by the phrase that provides the content for that event. The *proc*P (process projection) is the heart of the dynamic predicate (it represents change through time) and it is present in every dynamic verb. The complement position itself is complex and contains another mini-predication, with its own specifier and complement. In this way, the participant relations are built up recursively from successively embedded event descriptions and 'subject' predications. Note that the *proc* head can either combine with a whole *res*P (result projection) to create a telic pair or take a simple XP (DP, AP or PP) in its complement position, which does not determine its own independent subevent, but acts as a further modifier or descriptor of the *proc* event (cf. Ramchand 2008:46)[44].

The *init*P layer introduces the causation event[45] and licenses the external argument ('subject of cause' = INITIATOR[46]); the *init*P is present when the verb expresses a

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[44] Note that, when the complement XP position is not overtly specified, Ramchand (2008:62) assumes that this position is filled by a contextual variable.

[45] The causation event represents the external causative projection, which is responsible for the introduction of the external argument. To many respects, it is similar to the external argument that introduces *v* in recent literature (e.g. Hale & Keyser 1993).

[46] Initiators are defined as the individual entities that possess the property denoted by the initiational subeventuality, which leads to the process coming into being (cf. Ramchand 2008:52). It is important to stress that INITIATION does not entail agentivity: *the sun*, in a sentence like *the sun melted the snow*, and *the key*, in *the key opened the lock*, are the initiators of the event.

causational or initiational state that leads to the process. Ramchand (2008:55) points out that the difference between pure 'Causes' and actual 'Actors' is that, while an 'Actor' is related to both initiation and process (which may also lead to a result, but not necessarily), i.e. it is an Initiator-Undergoer, a 'Cause' is a pure specifier of initiation, i.e. it is just an Initiator. Ramchand also observes that animate/human-referring DPs can be interpreted as volitional causers, willful controllers or experiencers of static or changing mental states; thus, according to Ramchand (2008:55), the psychological version of a pure cause is an 'intentional initiator' and the psychological version of an 'actor' is a volitional agent with continuous experiential involvement in the process[47]. Therefore, Ramchand does not make distinctions between different initiational heads in a feature-based sense and she also does not distinguish a causational head from an agent introducing one to account for different kinds of subjects. Different subjects can rather be accounted for in terms of the difference between Initiator and Initiator-Undergoer (an entity continuously involved in the process) and in relation to the encyclopedic content (either the verb's lexical-encyclopedic information or the referential properties of the DP participant, i.e. animate vs. inanimate).

The *proc*P layer specifies the nature of the change or process and licenses the entity undergoing change or process ('subject' of process = UNDERGOER). The *res*P layer provides the *telos* or *result state* ('subject' of result = RESULTEE).

According to this proposal, there is a general combinatorial semantics that interprets this syntactic structure in a regular and predictable way. This means that the semantics of the event structure and event participants "is read directly off the structure and not directly off the information encoded by the lexical items" (Ramchand 2008:42). The possibilities for event combination correspond to two distinct types of event-event relation, which are part of the semantic ontology. The first relation is that of 'causation/initiation':

(29) $e = e_1 \rightarrow e_2$: e consists of two sub-events, e_1 and e_2; e_1 causally entails e_2 (cf. Hale & Keyser 1993).

The idea is that the event position corresponding to a transitive verb such as *eat* can be decomposed into two subevents related by causation, where e_1 is the causing or

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[47] Moreover, psych resultees are experientially affected.

instigating force and e_2 is the event of something being consumed. See (30), from Ramchand (2008:42).

(30)   eating (e) *where* e = $e_1 \rightarrow e_2$: [cause-eat (e_1) & process-eat (e_2)]

The second important semantic relation between events is telic augmentation, i.e. the addition of a particular attained result (e.g. Rappaport Hovav & Levin 1998): accomplishment predicates (in the sense of Vendler 1967) consist of the two subevents of process and telos, respectively, in their representation (the initiational information may be present or not), and the process leads to the resultant state, creating a complex event, as the one shown in (31), from Ramchand (2008:43).

(31)   'defuse the bomb' (e) *where* e = <e_1, e_2>: [process-defuse (e_1) & result-of-defusing (e_2)]

The causal embedding is the only primitive in the combinatorial system which can create complex events of the same logical type (the difference between causational and resultative semantics is due to a different hierarchical order in the embedding). Subevents are not ontologically different from macro-events: they are simple processes or states. There are two general primitive predicates corresponding to the basic subevents: state and process (eventuality that contains internal change). Ramchand (2008) assumes that both the initiational eventuality and the result eventuality are states, and that their interpretation comes from the position in the hierarchical structure: in the *init* position the state is interpreted as causally entailing the process; in the *res* position the state is interpreted as causally entailed by the process.

Each lexical item specifies the syntactic relevant information (category labels or 'tags'), which permit its insertion in the eventive structure. For example, in English the lexical entry for a verb such as *push* will be *push* [init, proc], while for a verb like *throw* the lexical entry will be [init, proc, res]. Given the existence of this functional sequence, the syntactic structures are freely built up by Merge, but they have to be licensed by the presence of specific lexical items. The lexical items simply Merge[48]

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[48] Since lexical items have more than one category label, Ramchand (2008) assumes that elements may Merge and project and then Remerge (cf. Starke 2001) at a later state of derivation. For example, the verb push has two features, [init, proc]. The verb push will Merge with a DP in its specifier position and project its [proc] label. Since it also has an [init] feature, it Remerges with *proc*P, which now projects the *init* label. This new syntactic objects then Merges with the specifier to project an *init*P.

and project according to their category features. If Merge does not build a functional sequence that is correctly ordered and interpretable, then the derivation will crash (cf. Butt & Ramchand 2005). At the interface, the encyclopedic content of the lexical items is unified with the semantics given by the combinatoric system. A lexical item can only associate with a node that matches the category features it is listed with.

Ramchand (2008:97) assumes a 'superset principle', according to which a lexical item may be inserted to spell out a sequence of heads if its category signature is a superset of the sequence to be spelled out[49]: "The phonological exponent of a Vocabulary item is inserted into a node if the item matches all or a superset of the grammatical features specified in the node. Insertion does not take place if the vocabulary item does not contain all features present in the node. Where several Vocabulary items meet the conditions for insertion, the item containing less features unspecified in the node must be chosen" (Caha 2007; cf. also Caha 2008:259).

Ramchand (2008) uses the term 'underassociation' to indicate the use of a lexical item that bears a superset of the category features it actually spells out. However, she assumes that underassociation is subject to specific conditions and proposes the following tentative constraints: "if a lexical item contains an underassociated category feature, (i) that feature must be independently identified within the phase and linked to the underassociated feature, by Agree; (ii) the two category features so linked must unify their lexical-encyclopedic content." (pp. 97-98).

In Table 3, you may see the different lexical types in English singled out by Ramchand (2008), with the specification of the participant relations.

Table 3 – Lexical types (Ramchand 2008)

TYPES	PARTICIPANTS	EXAMPLES
[init, proc]		
Ia. TRANSITIVE	INITIATOR, UNDERGOER	*drive, push*
Ib. TRANSITIVE	INITIATOR, PATH	*eat, read*
II INTRANSITIVE	INITIATOR_i UNDERGOER_i	*run*
[init, proc, res]		
IIIa. TRANSITIVE	INITIATOR, UNDERGOER_i, RESULTEE_i	*throw, defuse*

Ramchand represents Remerge using copies because they basically represent the same idea. If an element is present in more than one position in the structure, the spell-out of this item will correspond to the 'highest' position in the syntactic representation (cf. Ramchand 2008: 59 and fn.6).

[49] The 'superset principle' terminology is due to Michal Starke (cf. Starke 2006, 2009), who also assumes a system where lexical items spell out chunks of tree structure. The superset principle replaces the 'subset principle' of theories like distributed morphology (cf. Halle & Marantz 1993, Embick and Noyer 2001).

IIIb. TRANSITIVE	INITIATOR$_i$, UNDERGOER$_i$, RESULT-RHEME	*enter*
IV INTRANSITIVE	INITIATOR$_i$, UNDERGOER$_i$, RESULTEE$_i$	*arrive, jump*
V DITRANSITIVE	INITIATOR, UNDERGOER, RESULTEE	*give, throw*
[proc]		
VI INTRANSITIVE	UNDERGOER	*melt, roll*
[proc, res]		
VII INTRANSITIVE	UNDERGOER$_i$, RESULTEE$_i$	*break, tear*
[init, proc, N]		
VIII		
N-CONFLATION	INITIATOR$_i$, UNDERGOER$_i$	*dance, sleep*
[init, proc, A]		
IX		
A-CONFLATION	UNDERGOER	*dry, clean*

In this system, thematic relations are determined by the configuration of the system; the participant roles are: INITIATOR, UNDERGOER, RESULTEE, RESULT-RHEME[50] AND PATH[51]. The roles can be composite (as indicated by the 'i' indices in the table), i.e. not all of the specifier positions need to be filled with a distinct DP: UNDERGOER-INITIATOR arises when the same argument is holder of the initiational state and of a changing property homomorphic with the event trace of the *proc* event (this includes many cases of Actors or volitional agents discussed in the literature); RESULTEE-UNDERGOER arises when the same argument is the holder of a changing property homomorphic with the event trace of the *proc* event and the holder of the result state.

With respect to the traditional *Aktionsart* classes (cf. Vendler 1967, Dowty 1979, Smith 1997), activities corresponds to [init, proc] or [proc] verbs; accomplishments correspond to [init, proc] verbs with an incremental theme or path complement; achievements correspond to [init, proc, res] or [proc, res] verbs; semelfactives are ambiguous between [proc] and [proc, res] verbs; degree achievements are [proc]

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[50]Rhematic material never occurs in the specifier position of an eventive head; it will always occur in complement position to an eventive head. Rhemes (of which Paths are an important subcase) do not describe elements that are individuated and predicated over within an event topology, but those that actually co-construct the specific predicational property (static or dynamic) that the 'subject' is asserted to have. Rhemes of process further describe the process by expressing manner or path; rhemes of result are rhematic DPs which describe the final result (state or location). For example, in the sentence *Ariel entered the room*, Ariel is the INITIATOR of a process of which she herself is the UNDERGOER and has the role of RESULTEE as well, since she has to reach the final location described by the DP *room* (cf. Ramchand, 2008: 76; on RHEME cf. pp. 34-36).

[51] PATH corresponds to the well known 'incremental theme' in the literature (e.g. Krifka 1998).

verbs with a scalar property path. Deadjectival verbs tend to be unaccusatives, while denominal ones tend to be unergative.

In this system there is no projection for telicity (feature [+telic]); telicity emerges as a result of the interaction of different factors. However, the presence of a *res*P gives rise to telicity; classes III, IV, V are telic by default and are punctual as well. Class I is telic when the PATH argument is bounded; class VI is telic when there is a final point in the change scale.

In the next section we will illustrate some of the lexical types found in Chinese.

1.4.1 Lexical types in Chinese

In this section, following Ramchand's (2008) proposal, we try to make a first attempt at showing some of the main different lexical types of verbs in Chinese, to exemplify how the system works and to point out the main elements which will be useful in order to understand the analyses proposed throughout the thesis.

1.4.1.1 Transitive [init, proc] verbs

Among transitive verbs, a distinction is needed between those that have an Undergoer object and those that, instead, have a Path object.

1.4.1.1.1 Transitive verbs with an Undergoer object

In Chinese, verbs like 开 *kāi* 'drive'[52] or 推 *tuī* 'push' can be listed as [init, proc] with two participant roles, an Initiator and an Undergoer (i.e. the internal argument), with the latter undergoing a change (a change of location in the example in (29)). These verbs in the traditional *Aktionsart* classifications would be activities. See the example in (32).

(32)　a. 我　开　　汽车。
　　　　 wǒ　kāi　　qìchē
　　　　 I　 drive　car
　　　　 'I drive the car'

---

[52] More precisely, this root means 'start or operate (a machine, car, ship, plane, etc.)', e.g. 开飞机 *kāi fēijī* 'fly (or pilot) a plane', 开机器 *kāi jīqì* 'operate a machine', 开枪 *kāi qiāng* 'shoot (operate rifle)', 开船 *kāichuán* 'sail (operate ship)'.

b.

```
                              initP
                            /      \
            我 wǒ 'I'      /         \
                        /            \
                     init          procP
                  开 kāi 'drive'    /    \
                               /       \
              汽车 qìchē 'car' /          \
                           /             \
                        proc             XP
                    < 开 kāi 'drive'>     △
```
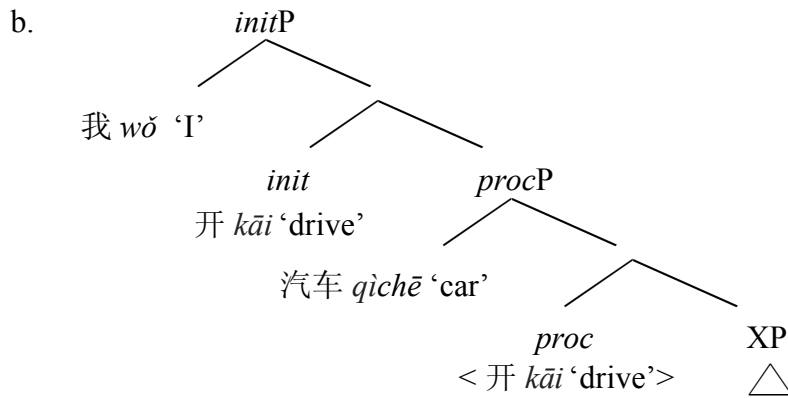
These verbs can take a Path in the XP position, which is interpreted as the path travelled by the Undergoer (path-goal, cf. Smith 1997) and creates a telic event from an atelic one (activity; cf. Smith 1997), as in the example in (33).

(33)   他   开   汽车   到   车站
       tā   *kāi* *qìchē* *dào* *chēzhàn*
       he   drive car   to   station
       'He drove the car to the station'
       (From the PKU corpus)

Among transitive [init, proc] verbs, those where the Initiator and the Undergoer are distinct can be distinguished from those where these two roles are filled by the same DP, i.e. verbs with a Path object, which will be discussed in the next section.

1.4.1.1.2 Transitive verbs with a Path object

Ramchand (2008) observes that some transitive verbs are characterized by having an object which is not the Undergoer of the Process but a Path (incremental theme). As we have seen, with respect to the traditional classification, these verbs are accomplishments. In this case the DP is not construed as definitional to the process itself but rather is a 'traveler' or 'trajector' of the path (cf. Ramchand 2008:65). According to Ramchand, when the verb takes a Path object, the property mapped onto the process is inherent to the DP and does not change; the homomorphism with the process of the event is established via the scalar structure of the inherent property, and the process is defined by its progress through the scale provided by the Path object. Therefore, Paths are different from Undergoers: "In the case of UNDERGOERS, the DP's existence is independently established and it possesses varying degrees of a property as a result of the event." (Ramchand 2008:65).

This class includes creation/consumption (or ingestive) verbs, like *eat, drink, read, write*, etc. Ramchand (2008) assumes that the specifier position of the *proc* projection is not filled by the direct object of the verb (which is a Path), and that it is the Initiator itself which fills the Undergoer position as well, given its status as continuous experiencer of the process[53]. According to Ramchand (2008:66-67), this predicts that rhematic object verbs require 'actors', but never allows pure 'causes', e.g. *John ate the apple* vs. *rust ate the drainpipe.*

As highlighted by Krifka (1998), with creation/consumption verbs telicity emerges when the incremental theme arguments are quantized, i.e. when they are countable nouns or measure constructions, such as *three apples*, *a cup of tea,* etc.

According to the general opinion in the literature, Chinese should not have this kind of verbs. Huang (2005) claims that Chinese accomplishment verbs are expressed by a light verb or by a compound verb (activity + result). Tai (1984) observes that English accomplishment verbs, if in the past tense or present perfect, necessarily entail the attainment of a goal[54], while in Chinese the attainment of a result may be expressed only by compound verbs: Chinese would not have simple accomplishment verbs (cf. also Sybesma 1997). This conclusion comes from examples like that in (34a) (cf. Chu 1976), which contrasts with the English example in (34b):

(34)   a. 我　昨天　　写　了　　一　　封　　信，可是　　没 写完。
       wǒ zuótiān xiě le yī fēng xìn kěshì méi xiěwán
       I yesterday write ASP one CL letter but not write-finish
       'I wrote a letter yesterday, but I didn't finish it.'
      b. ?? *John wrote a letter yesterday, but he didn't finish it.*

According to Lin (2004), the verb 写 *xiě* 'write' in Chinese never entails a result, the completion of the incremental theme. It appears that the only way to express the attainment of a result in Chinese is by using a compound verb of the resultative type, or more precisely, a compound containing a 'phase complement' (cf. Chao 1968, Li & Thompson 1981, Huang 2007, among others), e.g. 写完 *xiěwán* 'write-finish', as in the example in (35):

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[53] Ramchand (2008:66) further observes that the alternative for English would be to relax the requirement that all specifiers of subevental projections be filled at some stage of the derivation. This relaxation would require a further specification on the roots, which forces the non-projection of a specifier. However, for the sake of theoretical economy, Ramchand tentatively assumes that the subject argument of these verbs is always an Undergoer-Initiator).

[54] It should be noted that this is true with a quantized incremental theme, otherwise the event can be atelic even at the past tense: e.g. *he wrote letters for hours.*

(35) *我 昨天　 写完　　 了 一　封 信，可是 没　　 写完。
　　　*wǒ zuótiān　xiěwán　 le　yī　fēng xìn　kěshì méi　　xiěwán
　　　 I　 yesterday write-finish ASP one CL　letter but　 not　　write-finish
　　　 'I wrote a letter yesterday but I didn't finish it.'

We do not aim at going in depth into the problem, but here we just want to stress
that these verbs behave exactly as in English and that the differences found, following
Soh & Kuo (2005), lie in differences in the nominal system of the two languages[55].
Consider the examples in (36):

(36) a. 他 吃　了 那　个　蛋糕/* 两　个　蛋糕，但是 没　　吃完。
　　　　 wǒ chī　le nà　ge　dàngāo liǎng ge　dàngāo dànshì méi　　chīwán
　　　　 I　eat ASP that CL　cake　 two　CL　cake　but　　 not　　eat-finish
　　　　 'He ate that cake / * two cakes, but he didn't finish them.'
　　　　 (Adapted from Soh & Kuo 2005:204)
　　　b. 我　　昨天　　 看 了　　 一　　 本　　 书，可是　 没　　看完。
　　　　 wǒ　 zuótiān　kàn le　　 yī　　 běn　　 shū kěshì　 méi　　kànwán
　　　　 I　　yesterday read ASP　 one　　CL　　 book but　　 not　　write-finish
　　　　 'I read a book yesterday, but I didn't finish it.'
　　　　 (Adapted from Soh & Kuo 2005:202)
　　　c.*他 做 了　一 个 蛋糕/ 两　个 蛋糕/ 那 个 蛋糕，
　　　　 tā zuò　　 le　yī ge dàngāo liǎng ge dàngāo　nà　ge dàngāo
　　　　 he make　　ASP one CL cake　 two　CL cake　 that CL cake
　　　　 可是 没　做好。
　　　　 kěshì méi zuòhǎo
　　　　 but　not　make-finish
　　　　 'He made a cake / two cakes / that cake, but did not finish making it.'
　　　　 (Adapted from Soh & Kuo 2005:205)
　　　d.*他　 造　　 了　　 一　　个　　　房子，可是　 没　　 造好。
　　　　 tā　 zào　 le　　 yī　　 ge　　 fángzi kěshì méi　　 zàohǎo
　　　　 he　 build ASP　　one　　CL　　 house but　 not　　 build-finish
　　　　 'He built a house, but did not finish building it'
　　　　 (Adapted from Soh & Kuo 2005:204)
　　　e. 他　画　 了 一　副　　 画/*　一 个 圈圈，　可是 没 画完。
　　　　 tā　 huà　le yī　fù　　 huà　yī　ge quānquan kěshì méi huàwán
　　　　 he　 draw ASP one CL　　 picture one CL circle　 but　not draw-finish
　　　　 'He drew a picture / *a circle, but he didn't finish drawing it.'
　　　　 (Adapted from Soh & Kuo 2005:201)
　　　f. 他　写　 了 一 封　　 信 /*　一 个 字，　　 可是　没 写完。
　　　　 tā　 xiě　 le yī fēng　 xìn　yī ge zì　　kěshì méi xiěwán
　　　　 he　 write ASP one CL　 letter　 one CL character but　　 not　write-finish
　　　　 'He wrote a letter /*a character, but he didn't finish writing it.'
　　　　 (Adapted from Soh & Kuo 2005:202)

---

[55] Note also that there is not absolute agreement on the acceptability of a sentence like (34a) among
Chinese native speakers.

g. 他　　画　　了 *两　副　　画　 /　那　副　　画，　　可是　没　画完。
　　tā　huà　le liǎng fù huà　nà fù huà　kěshì méi huàwán
　　he　draw ASP two CL picture that CL picture but not draw-finish
　　'He drew *two pictures / that picture, but he didn't finish drawing them/it.'
　　(Adapted from Soh & Kuo 2005:205)

h. 他　画　　了　一　副　　　画，　　可是　没　画完。
　　tā　huà　le yī fù　huà　kěshì méi huàwán
　　he　draw ASP one CL　picture but not draw-finish
　　'He drew a picture / *one picture, but he didn't finish drawing it.'
　　(Adapted from Soh & Kuo 2005:205)

The examples show that, in non-creation verbs followed by an object (36a-b), the completion of the event is not necessary.

Given the examples in (36a) and (36b), Soh & Kuo (2005) claim that the difference in the boundedness of the event between English and Chinese does not have its source in any difference in the perfective aspect (vs. Smith 1994, 1997)[56], but rather in the different nominal systems of the two languages. A numeral object has the feature [+bounded], while a demonstrative object may be [+bounded] or [-bounded]. This difference is responsible for the fact that completion is necessary with a numeral object, but not with a demonstrative object (36a). They assume that English head nouns distinguish count nouns from mass nouns, while Chinese head nouns are mass (Chierchia 1998, Cheng & Sybesma 1999). Therefore, English singular count nouns start out as being bounded ([+b, -i][57]) and Chinese nouns start out as being unbounded (either as [-b, -i] or [-b, +i]). Since Chinese definite/indefinite noun phrases may be [+b] or [-b], completion is not necessary. In contrast, English definite/indefinite singular count noun phrases are [+b], thus completion is necessary.

As far as the numeral 一 *yī* 'one' is concerned, we have seen that it does not necessarily entail completion (cf. 34a). Soh & Kuo (2005) propose an analysis according to which the numeral 一 *yī* 'one' can be interpreted as either a numeral ('one') or as an indefinite determiner. When it is interpreted as a numeral, the noun

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[56] Soh & Kuo (2005) suggest that Mandarin perfective aspect behaves like English perfective aspect in that it indicates the completion of a telic/bounded event, and the termination of an atelic/non-bounded event. Xiao & McEnery (2004) claim that the Chinese aspect marker 了 *le* only shows a situation as a whole, without providing any final point. These authors conclude that the function of the marker 了 *le* is "to mark the actuality rather than indicate the boundary of a situation." (p. 105).

[57] [±b] = ±bounded; [±i] ±internal structure. Note that the [-i] value does not mean lack of internal structure, but rather the absence of necessary entailment about internal structure (cf. Soh & Kuo 2005: 205)

phrase is [+b,+i]; when it is interpreted as an indefinite determiner, the noun phrase is [±b, +i].

With verbs of creation (36c-h), things are slightly different, since the completion/non-completion seems to depend on the kind of created object, i.e. No Partial Objects (NPO) or Allows Partial Object (APO) (cf. Soh & Kuo 2005). In the NPO object class, the object cannot be considered the relevant object until the process of creation has reached its inherent endpoint or has culminated (Parsons 1989); examples of these objects are 一个蛋糕 *yī ge dàngāo* 'a cake', 一个字 *yī ge zì* 'a character', 一个圈圈 *yī ge quānquan* 'a circle', 一个房子 *yī ge fángzi* 'a house' (36c-f). In contrast, the objects found in the other class of created objects (APO) can be considered relevant objects before culmination, e.g. 一封信 *yī fēng xìn* 'a letter', 一副画 *yī fù huà* 'a picture' (36e-h); for example, if the event of drawing a picture is stopped before culmination, the partially created object can be properly called 'a picture' (cf. Soh & Kuo 2005).

When the creation event involves an NPO object, the event must reach the endpoint, regardless of the form of the object. Therefore, differently from the cases with non-creation verbs (36 a-b), no contrast is found between determiners and numerals: the sentence sounds contradictory both with numeral objects and with determiner objects (36c-f). In contrast, when the sentence contains a creation verb with an APO object, there is a contrast between numerals and demonstrative objects (cf. 36g-h): the sentence is contradictory with a numeral object, but not with a demonstrative object. This contrast is due to the fact that the creation event must reach the point where the partially created object qualifies as the relevant object; there is no requirement that the inherent endpoint of the event be reached (cf. Soh & Kuo 2005:205).

Consequently, Soh & Kuo (2005), *contra* Tai (1984) (cf. also Lin 2004), assume that Chinese does have simple accomplishment verbs: completion of the event is necessary with numeral objects and with NPO created objects. The differences between English and Mandarin Chinese are due to their different nominal system.

Given these facts, we consider Chinese verbs like 吃 *chī* 'eat', 喝 *hē* 'drink', 写 *xiě* 'write', 画 *huà* 'paint' as transitive verbs with a Path object, as their corresponding verbs in English; these verbs have the structure in (37)[58].

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[58] Note that the aspect marker 了 *le* is not represented in the structure, since aspect and other material like tense, etc., are merged above this structure.

(37) a. 我　吃　　了　　一　　个　　苹果。
　　　　wǒ chī le yī ge píngguǒ
　　　　I　eat　ASP　one　CL　apple
　　　　'I ate an apple.'

b.

```
                    initP
                   /    \
            我 wǒ 'I'     \
                   吃 chī 'eat'    procP
                              /      \
                     < 我 wǒ 'I'>      \
                               proc        DP
                          <吃 chī 'eat'>    △
                                         一个苹果
                                      yī ge píngguǒ
                                       'an apple'
```
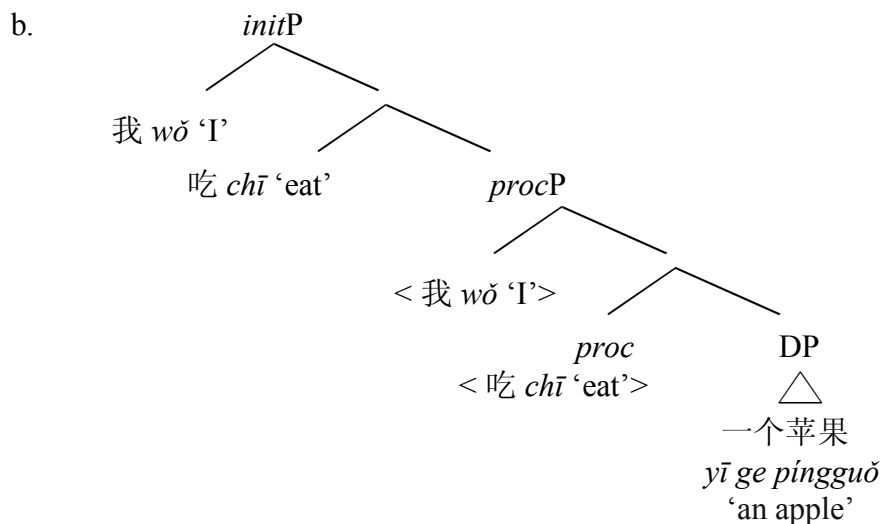
These verbs, when used intransitively, require the presence of a semantically weak, non-referential object (Ross 1998 calls these objects 'cognate' objects, Cheng & Sybesma 1998 terms them 'dummy object'), in their intransitive/unspecified object reading (cf. Cheng & Sybesma 1998)[59], e.g. 看书 *kànshū* 'read+books = read', 吃饭 *chīfàn* 'eat + rice/meal = eat'. We can assume that these dummy objects are rhemes which fill the complement position of *proc* (cf. also 1.4.1.2).

1.4.1.1.3 Transitive [init, proc, res] verbs with rhematic DPs

Another group of transitive [init, proc, res] verbs singled out by Ramchand (2008) are English verbs like *find* and *enter*, the DP objects of which are not undergoers of the process or holders of a result state but rather rhematic elements describing the final result. For example, in a sentence like *Ariel entered the room*, Ariel covers the role of Initiator-Undergoer, as well as that of Resultee attaining the final location described by the DP *the room*. In Chinese, verbs containing both an [init] and a [res] feature are very often compounds formed by two verbal roots, which identify differente pieces of the events (e.g. 找到 *zhǎodào* 'search-arrive = find'). However, the verb 进 *jìn* 'enter', seems to be characterized as a [init, proc, res]. Consider the example in (38),

---

[59] Note that, when 吃 *chī* 'eat' is used without an overt object, it involves a definite interpretation (pro). For example, a sentence like 张三吃了 *Zhāngsān chī le* 'Zhangsan eat ASP = Zhangsan ate it' cannot mean that Zhangsan had a meal, but only that Zhangsan ate something specified by the context (cf. Cheng & Sybesma 1998:83).

where the subject of the sentence, 孩子 *háizi* 'child', is an Initiator-Undergoer as well as a Resultee attaining the final location described by the DP 教室 *jiàoshì* 'classroom'.

(38) a. 孩子　　　进　　了　　教室。
　　　　háizi　　*jìn*　　*le*　　*jiàoshì*
　　　　child　　enter　ASP　classroom
　　　　'The child entered the classroom.'

b.
```
                    initP
                   /    \
   孩子 háizi 'child'     \
                  进 jìn 'enter'    procP
                               /      \
              < 孩子 háizi 'child' >    \
                        <进 jìn 'enter'>    resP
                                         /     \
                      < 孩子 háizi 'child' >     \
                                        res        DP
                                  <进 jìn 'enter'>  教室 jiàoshì
                                                    'the room'
```
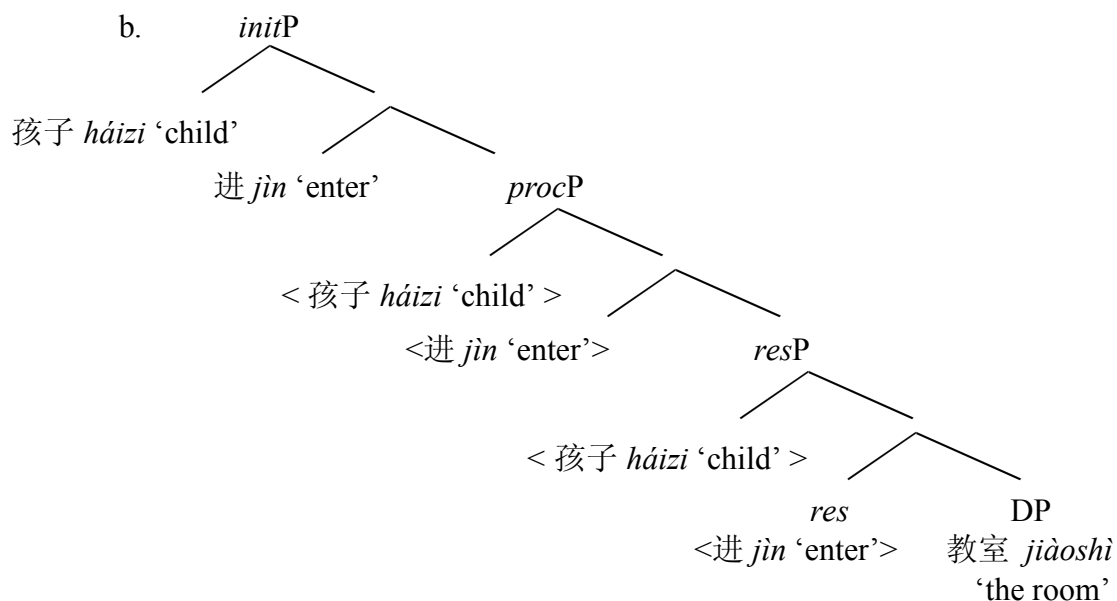
1.4.1.2 Intransitive verbs

Unergative verbs in this system possess [init, proc] features and have a single composite role, i.e. Initiator-Undergoer, e.g. 笑 *xiào* 'laugh'. See the example in (39):

(39) a. 孩子　　　笑　　了
　　　　háizi　　*xiào*　*le*
　　　　child　　laugh　ASP
　　　　'The child laughed'

b.
```
                    initP
                   /    \
   孩子 háizi 'child'     \
                     init        procP
                  笑 xiào 'laugh'   /    \
            < 孩子 háizi 'child' >        \
                                    proc        XP
                              <笑 xiào 'laugh'>   △
```

59
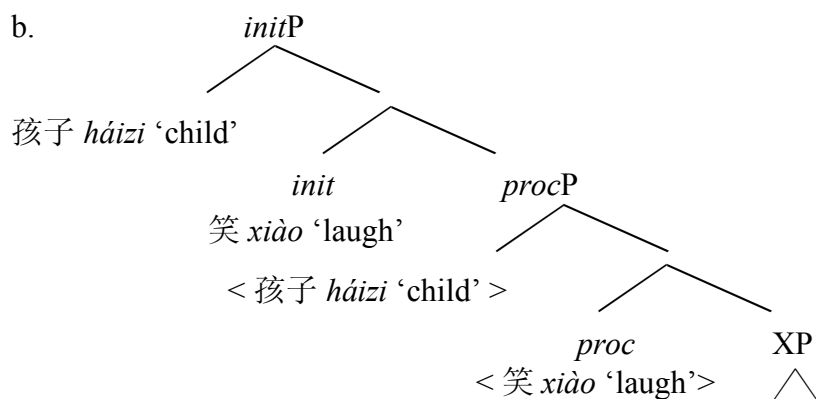
Ramchand (2008) observes that for intransitive [init, proc] verbs, path objects are in principle allowed, e.g. *Michael ran the race* (p.72), Ch. 我跑了马拉松 *wǒ pǎo le mǎlāsōng* 'I run ASP marathon = I ran the marathon'[60].

In Chinese most unergative verbs have a VO counterpart, formed with a dummy object (cf. Cheng & Sybesma 1998), e.g. 走路 *zǒu-lù* 'walk + road = walk', 跑步 *pǎo-bù* 'run/jog', in a similar way as transitive verbs with a Path object, as shown in section 1.4.1.1.2 (cf. also 6.3.2.2). The difference between the two kinds of verbs is that, while with transitive verbs with a Path object, like 吃 *chī* 'eat', dummy objects are obligatory in the intransitive/unspecified object reading, with intransitive verbs like 跑 *pǎo* 'run' the dummy object is optional, e.g. 他喜欢跑(步) *tā xǐhuān pǎo (bù)* 'he like run (step) = he likes to run' (cf. Cheng & Sybesma 1998:82). Interestingly, Cheng & Sybesma (1998) point out that, in Chinese, there is just a very small class of intransitive verbs which do not have a VO counterpart; they just found the verbs 笑 *xiào* 'laugh' and 哭 *kū* 'cry'. Cheng & Sybesma (1998:85-86) consider these dummy objects (as well as those found with transitive verbs with a Path object, cf. 1.4.1.1.2) as syntactic active objects, for different reasons. First of all, dummy objects are in complementary distribution with other objects: e.g. 吃 (*饭)苹果 (*饭) *chī (*fàn) píngguǒ (*fàn)* 'eat (*rice) apple (*rice)'; 跑商店 *pǎo shāngdiàn* 'run shop = go to shops' vs. *跑步商店 *pǎobù shāngdiàn* 'run-step shop' or *跑商店步 *pǎo shāngdiàn bù* 'run shop step'. Dummy objects, thus, never co-occur with other kinds of objects. Furthermore, a postverbal quantitative expression can occur between the verb and the dummy objects, in the same way as "normal" objects do: e.g. 跑一下步 *pǎo yīxià bù* 'run a-bit step = run a bit'. Finally, Cheng & Sybesma (1998) observe that dummy objects can be modified, especially by time expressions, e.g. 我跑了一个小时的步 *wǒ pǎo le yī ge xiǎoshí de bù* 'I run ASP one CL hour DE step = I run/jogged for an hour', 我看了两天的书 *wǒ kàn le liǎng tiān de shū* 'I read ASP two day DE book = I read for two days'. Therefore, Cheng & Sybesma (1998) consider dummy objects as

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[60] Note that many Chinese verbs, both transitive and intransitive, can take different kinds of DPs as objects, which are not direct objects but other types of complements: e.g. a locative complement, as in 走草地 *zǒu cǎodì* 'walk grassland = walk on the grassland'; a result, as in 跑第一名 *pǎo dìyī míng* 'run the first (in competition) = arrive first in a race'; a manner 跑圈儿 *pǎo quānr* 'run circle = run in circles', etc. (examples taken from 汉语动词用法词典 'A Usage Dictionary of Chinese Verbs' (HDYC 1999).

syntactic active objects and give VO verbs taking a dummy object the structure in (40), from Cheng & Sybesma (1998:85), representing 跑步 *pǎo-bù* 'run/jog'.

(40)

```
              VP
             /  \
            V    NP
            |     |
       跑 pǎo 'run'  N
                 步 bù 'step'
```
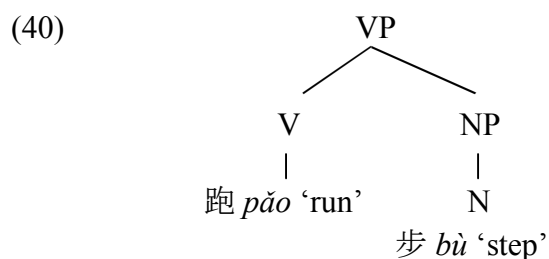
Reinterpreting Cheng & Sybesma's (1998) proposal in Ramchand's system, we propose that the dummy objects found with unergative verbs and with transitive verbs with a Path object in the intransitive/unspecified object reading (like 吃 *chī* 'eat', 看 *kàn* 'read'; cf. 1.4.1.1.2) are rhemes which fill the complement position of *proc*P, as shown in (41), representing 跑步 *pǎo-bù* 'run/jog'.

(41)

```
                    initP
                   /    \
                 DP₁     \
                        /  \
                      init   procP
                   跑 pǎo 'run'  /  \
                             < DP₁ >  \
                                    /   \
                                 proc    NP
                           < 跑 pǎo 'run'>  步 bù 'step'
```
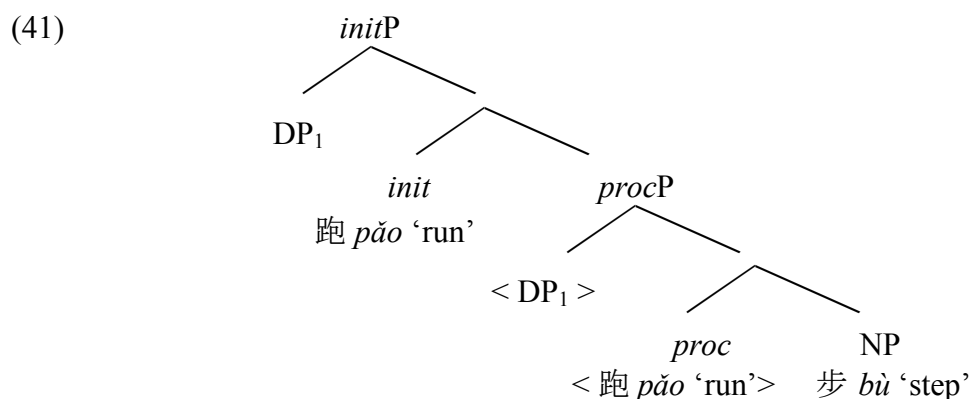
The fact that most unergative verbs in Chinese take a dummy object makes them similar to transitive verbs[61]. It is not clear why 笑 *xiào* 'laugh' and 哭 *kū* 'cry' behave differently from other unergative verbs (cf. Cheng & Sybesma 1998).

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[61] Note that Hale & Keyser (1993, 1998, 2002) show that unergative verbs are in many respects similar to transitive verbs, even though they are not causatives. According to Hale & Keyser, a transitive verb like *make* and an unergative verb like *laugh* share the same lexical structure, i.e. "lp-monadic structure" (lp = lexical projection): the argument structure configuration projected by the head contains just one argument, i.e. the complement. See the structures in (i) and (ii) for *make* and *laugh* respectively:

```
(i)     V                    (ii)    V
       / \                          / \
      V   NP                       V   NP
      |    |                       |    |
    make   N                            N
           |                            |
        trouble                       laugh
```

Besides dummy objects, unergative verbs can take other kinds of objects (cf. also fn. 60), as in 跑商店 *pǎo shāngdiàn* 'run shop = go to shops' seen above, which could be considered as rhematic DPs. These issues deserve further investigation.

Among intransitive verbs, there are unaccusative verbs, e.g. 断 *duàn* 'break' and 死 *sǐ* 'die' (two [proc, res] verbs). We will consider this issue in detail in chapter 4, where we will also discuss the causative alternation in Chinese.

Ramchand (2008) includes English verbs like *arrive* and *fall* among intransitives. According to Ramchand, these verbs have [init, proc, res] features and a single Initiator-Undergoer-Resultee role. She observes that these verbs are traditionally considered to be 'unaccusative' (cf. 2.4.1) and this is due, according to her, to their obligatory telic character and monotransitivity (p.78). Ramchand cannot see any language-specific reasons for ascribing an English verb like *arrive* to the class of verbs that have no initiation component[62]. However, the corresponding kind of verbs in Chinese, as e.g. 到 *dào* 'arrive', 倒 *dǎo* 'fall', 走 *zǒu* 'leave', apparently behave unaccusatively and are characterized by having [proc, res] features. We will examine these verbs in chapter 4 (cf. also chapters 5 and 6 on resultatives, since these verbs can act as V$_2$s in resultative compounds)[63].

1.4.1.2.1 Semelfactives

Among intransitive verbs, Ramchand (2008) isolates the group of the so-called semelfactives (cf. Smith 1997, Rothstein 2004, 2008a), which are ambiguous between having a telic punctual reading and a durative, indefinitely iterated reading, in which

---

The difference between (i) and (ii) is that the lexical structure of an unergative verb like *laugh* (ii) involves incorporation of the nominal head of the NP complement into an abstract V (cf. Hale & Keyser 1993:54). Note that Hale & Keyser use the term monadic in relation to the arguments which must appear internal to the lexical configuration associated with a lexical item, not in relation to syntactic adicity (cf. Hale & Keyser 1998): in sentential syntax, a transitive verb is considered as dyadic, since it has both a subject and an object. The sentential subject is external, not a part of the lexical projection itself.

[62] Note that Ramchand assumes that the *there*-insertion test in English is not a diagnostic for unaccusativity, but rather is related to independent constraints connected to locative existential predications (Ramchand 2008:78, fn. 6). On the *there*-test in English, cf. 4.2.

[63] It should be noted that, even if we were to consider a verb like 到 *dào* 'arrive' as a verb endowed with an [init] feature, it would behave as 进 *jìn* 'enter' discussed above (cf. 38), since it may take DPs describing the final location attained by the Initiator-Undergoer-Resultee, as for example:

他们	昨天	到	了	上海。
tāmen	*zuótiān*	*dào*	*le*	*Shànghǎi*
they	yesterday	arrive	ASP	Shanghai

'They arrived in Shanghai yesterday.'

case they are atelic, e.g. *knock*, *kick*, *jump*, *hiccup*. Ramchand (2008:80-81) assumes that these verbs are ambiguous between being [init, proc, res] and [init, proc]. Following this assumption, in Mandarin Chinese a verb like 敲 *qiāo* 'knock' should be ambiguous between being [init, proc, res], e.g. 我敲了门 *wǒ qiāo le mén* 'I knock ASP door = I knocked at the door'[64], or [init, proc], e.g. 我敲了十分钟 *wǒ qiāo le shí fēnzhōng* 'I knock ASP ten minute = I knocked for ten minutes'.

Note that for a verb of motion like 跳 *tiào* 'jump', the different readings correlate with the occurrence of different locative PPs: the occurrence of a preverbal locative PP (42a) correlates with an atelic (iterated) reading; the occurrence of a postverbal locative PP (42b) correlates with a telic (punctual) reading (cf. Chao 1968, Li & Thompson 1981, Sybesma 1992, among many others).

(42)   a. 孩子   在   床   上   跳。
         háizi   zài   chuáng shàng tiào
         child   at   bed   top   jump
         'The child is jumping on the bed.'
       b. 孩子   跳   在   床   上。
         háizi   tiào   zài   chuáng shàng
         child   jump   at   bed   top
         'The child jumped onto the bed.'

1.4.1.3 Double object verbs

Ramchand (2008) also takes into account double object verbs, which can manifest the dative alternation (cf. Larson 1988, Pesetsky 1995, Harley 2002, among others): *I sent him a letter* vs. *I sent a letter to him*. Ramchand stresses the fact that some verbs are good in the double object construction but not in the dative alternating version: *Bill threw Mary a glance* vs. **Bill threw a glance to Mary*; *the war years gave Mailer a book* vs. **the war years gave a book to Mailer* (from Harley 2002, cit. in Ramchand 2008:100).

Chinese too has double object verbs, e.g. 给 *gěi* 'give', 送 *sòng* 'give, send' and 教 *jiāo* 'teach'. While the verb 给 *gěi* 'give' can appear only in the double object construction, 送 *sòng* 'give, send' and 教 *jiāo* 'teach' can appear either in the double object construction (43a) or in the dative construction. In Chinese, the dative version makes use of the root 给 *gěi*. This root is generally considered as a 'coverb' (cf. Chao

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[64] Here, and in many other cases, as we have seen, the locative phrase in the complement position is realized by means of an NP object.

1968, Li & Thompson 1981), i.e. an item that may function as either a verb ('give') or as a preposition ('for; to; for the benefit of'). Examples in (43) show a sentence containing a double object verb (43a) and its possible dative variants with 给 *gěi* (43b-d). We will show that only (43b) is the dative alternant of (43a). For the moment, we do not provide the translations of sentences (43b-d).

(43) a. 我　送　　　　他　　一　　个　　礼物。
　　　　wǒ sòng　　　　tā　　yī　　ge　　lǐwù
　　　　I　give　　　　he　　one　CL　　present
　　　　'I give him a present.'
　　　b. 我　送　　　　一　　个　　礼物 给　　　　他。
　　　　wǒ sòng　　　　yī　　ge　　lǐwù gěi　　　　tā
　　　　I　give　　　　one　CL　　present give/to/for　he
　　　c. 我　送　　　给　　　　他　　一　　个　　礼物。
　　　　wǒ sòng　　　gěi　　　　tā　　yī　　ge　　lǐwù
　　　　I　give　　　give/to/for　he　　one　CL　　present
　　　d. 我　给　　　　他　　送　　　一　　个　　礼物。
　　　　wǒ gěi　　　　tā　　sòng　　yī　　ge　　lǐwù
　　　　I　give/to/for　he　　give　　one　CL　　present

The sentences in (43b-d) deserve some attention, given the double nature of the root 给 *gěi* as a verb and as a preposition. While it is generally agreed that the preverbal 给 *gěi* is a preposition (e.g. Li Y.H.A. 1990, Sybesma 1992 and 1999, Her 2006), there is no clear consensus on the nature of the postverbal 给 *gěi*: for example, while Zhang (1990) and Sybesma (1992, 1999) consider it as a preposition, Li Y.H.A. (1990) and Huang & Ahrens (1999) consider it as a verb (the reader is referred to the mentioned works for evidence in support of the two hypothesis). Huang & Ahrens (1999) argue that the postverbal 给 *gěi* occurring after a verb (43c) forms a complex predicate and that the postverbal 给 *gěi* following the direct object is part of a serial verb construction (for the serial verb construction, cf. 1.3.4.2.2). Due to this lack of agreement, let consider the possible dative alternations in (43b-d). Her (2006) points out that in sentences like those in (43b) 给 *gěi* may be a prepositions as well as a verb. Consider the examples in (44), adapted from Her (2006:1277):

(44) a. 李四 会　　借　　她　　一　　栋　　房子。
　　　　Lǐsì huì　　jiè　　tā　　yī　　dòng　fángzi
　　　　Lisi will　　loan　she　one　CL　　house
　　　　'Lee will loan her a house.'

b. 李四　　　会　借　一　栋　房子　给　　他。
   Lǐsì　　*huì*　*jiè*　*yī*　*dòng*　*fángzi*　*gěi*　*tā*
   Lisi　　will　loan　one　CL　house　give　she
   i. 'Lee will loan a house to her.'
   ii. 'Lee will borrow a house_i to give e_i to her.'

As it is shown, the sentence in (44b) has two possible readings. Her (2006) highlights the fact that, in a serial verb account (cf. Huang & Ahrens 1999), the 给 *gěi*-NP phrase is a VP adjunct, not an argument, and points out that, if 给 *gěi* were a verb only, the sentence in (44b) would have only the interpretation in (44bii). However, Her further notices that the identical semantic content in the reading of (44bi), which is the preferred one, and (44a) suggests a common argument structure, which is predicted by the prepositional account of 给 *gěi*[65]. Therefore, Her (2006) considers (44a) and (44b_i) as an instance of the so-called dative alternation. Her (2006) provides evidence in support of the prepositional analysis (e.g. the fact that the postverbal 给 *gěi* following an object does not allow aspect markers and cannot be stranded[66]). We will not discuss further such evidence, for which the reader may refer to the mentioned work (cf. also Zhang 1990). Following Her's (2006) account, we consider the sentence in (43b) as an instance of the dative construction, where 给 *gěi* is a preposition.

Let us now consider the sentence in (43c): here the root 给 *gěi* directly follows the verb. As observed by Her (2006), the V-给 *gěi* sequence is generally considered as a single lexical item, more precisely a complex verb (cf. Li Y.H.A. 1990, McCawley 1992, Her 1999, among others)[67]. According to Her (2006:1282), the fact that the V-给 *gěi* sequence cannot be separated (for example an aspect marker cannot follow the

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[65] According to Her (2006:1281), the two possible readings have the following structures respectively:

a. [V NP₁ [PP 给 *gěi* NP₂]]　　　　(V's argument structure = <x z y>)
b. [V NP₁_i [VP 给 *gěi* NP₂ e_i]]　　(V's argument structure = <x y>)

According to Her, among Sinitic languages, such ambiguity arises only in those languages where the verb 'give' and the goal-marking preposition are homonymous. For example, he considers the case of the Dongyang variety of Wu (cf. Liu 2001), where the distinction is quite clear: 分 *fai*24 (verb) vs. 呗 *lie* (preposition) (cf. 汉语方言大词典 'Great dictionary of Chinese dialects', HYDC 1999). According to Her, such evidence also provides indirect support for the prepositional nature of the postverbal 给 *gěi* following an object in Mandarin.

[66] Chinese does not allow prepositional stranding.

[67] Alternative accounts do exist. For example, Sybesma (1999:103) considers the postverbal 给 *gěi* in V-给 *gěi* as a preposition that may be left empty. Her (2006:1281, fn.5) criticises this approach, arguing that this kind of analysis complicates the grammar, since there is no other PP in Mandarin Chinese that may appear between the verb and its direct object.

first verb, i.e. *寄了给他 *jì le gěi tā* 'post ASP give he') is a proof of its lexical integrity; moreover, the fact that V-给 *gěi* as a whole can take an aspect marker (e.g. 寄给了他 *jì gěi le tā* 'post give ASP he') indicates that this unit is a single double object verb having the same argument structure as the verb 给 *gěi* 'give'. As for the exact process involved in V-给 *gěi* word formation, while some authors (cf. Huang 1993, Huang & Ahrens 1999) consider 给 *gěi* as a suffix, others (cf. Her 1999 and 2006, McCawley 1992) analyse V-给 *gěi* as a V-V compound (for an overview, cf. Her 2006:1281-1286). Therefore, we consider the 给 *gěi* in the sentence in (43c) as a verb forming a complex verb, and thus (43c) does not represent a real dative construction.

Finally, consider the sentence in (43d), which contains a preverbal 给 *gěi*. Her (2006) highlights that 给 *gěi* in the preverbal position represents a complicated issue and may have a number of different functions. First of all, it should be noted that in this position 给 *gěi* can be used as the matrix verb of a purposive clause (cf. Her 2006), as in (45), adapted from Her (2006:1286):

(45) 李四   给   她   这   笔   钱   买   房子。
      Lǐsì *gěi* *tā*   *zhè* *bǐ*   *qián* *mǎi* *fángzi*
      Lisi   give   she   this   CL   money buy   house
      'Lisi gave her this money to buy a house.'

Moreover, Her (2006:1286) also notices that the preverbal 给 *gěi* can act as a passive marker, in a way similar to the passive marker 被 *bèi*, as shown in (46), adapted from Her (2006:1286):

(46) 李四   给 / 被 她   骗   了。
      Lǐsì *gěi /bèi* *tā*   *piàn*   *le*
      Lisi   PASS   she   deceive ASP
      'Lisi was deceived by her.'

However, the prevalent use of the preverbal 给 *gěi* is the prepositional one (see above), which is the one found in (43d), where it marks the beneficiary (cf. Li & Thompson 1981, among others). See the example in (47), adapted from Her (2006:1287).

(47) 李四　　给 / 为　　　她　　摘下　　　了　　一　　朵　　花。
　　　Lǐsì　　*gěi/wèi*　　*tā*　　*zhāixià*　　*le*　　*yī*　　*duǒ*　　*huā*
　　　Lisi　　for　　　she　　pick-down　　ASP　　one　　CL　　flower
　　　'Lisi picked a flower (for her).'

Her (2006) notes that the 给 *gěi* beneficiary PP occurs with all kinds of predicates: intransitive, transitive and ditransitive. Moreover, predicates like those in (47) are complete without the preverbal 给 *gěi* PP. These facts suggest that the PP in (47) is not an argument but an adjunct marking the beneficiary role[68] and thus is different from the postverbal goal argument 给 *gěi* PP (cf. Her 2006).

However, Her (2006) highlights also that some prepositional dative verbs do allow the goal argument (给 *gěi* PP) to appear either preverbally or postverbally. With such verbs the preverbal 给 *gěi* PP is ambiguous between the goal reading and the beneficiary reading. See the example in (48), adapted from Her (2006:1288):

(48) 李四　　给　　老师　　寄　　了　　一　　份　　文件。
　　　Lǐsì　　*gěi*　　*lǎoshī*　　*jì*　　*le*　　*yī*　　*fèn*　　*wénjiàn*
　　　Lisi　　to/for　　teacher　　post　　ASP　　one　　CL　　document
　　　'Lee posted a document to/for the teacher.'

Nevertheless, not all prepositional dative verbs allow the goal PP to appear preverbally. An example is the verb 卖 *mài* 'sell', which requires the goal argument to occur postverbally; the preverbal 给 *gěi* PP with such a verb can only mark the beneficiary. See the examples in (49), adapted from Her (2006:1289):

(49)　a. 张三　　卖　　了　　一　　栋　　房子　给　　李四。
　　　　　Zhāngsān　　*mài*　　*le*　　*yī*　　*dòng*　　*fángzi*　*gěi*　　*Lǐsì*
　　　　　Zhangsan　　sell　　ASP　　one　　CL　　house　　for　　Lee
　　　　　'Zhangsan sold a house to Lisi.'
　　　b. 张三　　给　　李四　卖　　了　　一　　栋　　房子。
　　　　　Zhāngsān　　*gěi*　　*Lǐsì*　　*mài*　　*le*　　*yī*　　*dòng*　　*fángzi*　　.
　　　　　Zhangsan　　for　　Lisi　　sell　　ASP　　one　　CL　　house
　　　　　'Zhangsan sold a house for/*to Lisi.'

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[68] Its status as an adjunct is further supported by the possibility of having a post-object 给 *gěi* PP (cf. Her 2006:1288):

李四（给 / 为）我　　寄　　了　　一　　份　　文件　　　给　　老师
Lǐsì　　*gěi*　*wèi*　*wǒ*　　*jì*　　*le*　　*yī*　　*fèn*　　*wénjiàn*　　*gěi*　　*lǎoshī*
Lisi　　for　　I　　post　　ASP　　one　　CL　　document　　　to　　teacher
'Lisi posted a document to the teacher (for me).'

Her (2006:1289-1290) observes that verbs that do not allow the goal argument to appear preverbally are those which behave like 给 *gěi* 'give', allowing the double object construction, e.g. 卖 *mài* 'sell', 借 *jiè* 'loan', 换 *huàn* 'return'. These verbs contrast with those ditransitive verbs which do not allow the double object construction, e.g. 寄 *jì* 'post', 传 *chuán* 'pass': *李四寄了老师一份文件 *Lǐsì jì le lǎoshī yī fèn wénjiàn* 'Lisi post ASP teacher one CL document = Lisi sent the teacher a document' vs. 我卖了李四一栋房子 *wǒ mài le Lǐsì yī dòng fángzi* 'I sell ASP Lisi one CL house = I sold Lisi a house' (cf. Her 2006:1289). Her concludes that, in order to allow a preverbal goal-marking 给 *gěi* PP, a verb, first, must allow the prepositional dative construction and, second, must not allow the double object construction (for further arguments, cf. Her 2006:1290).

Let us now go back to sentence (43d); this sentence presents a preverbal 给 *gěi* PP and the verb 送 *sòng* 'give', which, as we have seen, allows the double object construction (cf. 43a). Therefore, following Her's (2006) conclusions, the 给 *gěi* PP in the example (43d) can only mark the beneficiary, and therefore it should not be considered as a manifestation of the dative alternation. In the light of these considerations, we should conclude that the only real dative version of the double object construction in (43a) is (43b), i.e. that with the postverbal goal-marking 给 *gěi* PP.

Let us now go back to Ramchand's (2008) proposal on the dative alternation. Ramchand decomposes these structures following the proposals of Pesetsky (1995) and Harley (2002)[69], with some differences: her system has a process projection (which is proper of all the dynamic verbs in this system); she adds a *res* head in the decomposition which gives rise to a resulting final predication. Ramchand assumes that double object verbs in English are listed with a [res] feature since they give rise to a punctual verb with a definite result. She also assumes that the preposition *to* in English is special in that it contains a [res] feature (cf. also Folli & Ramchand 2005). In the dative version, the preposition *to* identifies the *res* head; the verb *give* can

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[69] According to Pesetsky, in the dative version, the THEME is the specifier of a predicational relationship to the GOAL that is headed by *to*; on the other hand, in the double object version, the GOAL is the specifier of a predicational relationship headed by what he calls G. Harley claims that G is the possessional preposition P_{have}; therefore, she unifies the predicational substructure in the double object construction with other possessional constructions.

combine with *to*, given the possibility of underassociation (cf. 1.4), satisfying its own [res] feature by Agree and unification (cf. Ramchand 2008:102).

Applying this model to Chinese ditransitive verbs, we should have the decomposition in (50a) for the double object version (43a), and the decomposition in (50b) for the dative version (43b), where it is the preposition 给 *gěi* that identifies the *res* head (cf. Ramchand 2008:102-103).

(50)　a. *init*P

　　我 *wǒ* 'I'

　　　　init
　　　　送 *sòng* 'give'　　　　*proc*P

　　　　　　　　proc
　　　　　　　　<送 *sòng* 'give'>　　　*res*P

　　　　　　　　　　他 *tā* 'he'

　　　　　　　　　　　　res
　　　　　　　　　　　　<送 *sòng* 'give'>　　　PP

　　　　　　　　　　　　　　　　P　　　　DP
　　　　　　　　　　　　　　　　P_have　　△
　　　　　　　　　　　　　　　　　　　一个礼物
　　　　　　　　　　　　　　　　　　　yī ge lǐwù
　　　　　　　　　　　　　　　　　　　'a present'

　　b.　*init*P

　　我 *wǒ* 'I'

　　　　init
　　　　送 *sòng* 'give'　　　*proc*P
　　　　一个礼物 *yī ge lǐwù* 'a present'

　　　　　　　<送 *sòng* 'give'> [res]　　*res*P

　　　　　　<一个礼物 *yī ge lǐwù* 'a present'>

　　　　　　　　　res　　　　PP
　　　　　　　　　给 *gěi* 'to'

　　　　　　　　　　　　P　　　　DP
　　　　　　　　　　<给 *gěi* 'to'>　　△
　　　　　　　　　　　　　　　　他 *tā* 'he'

69
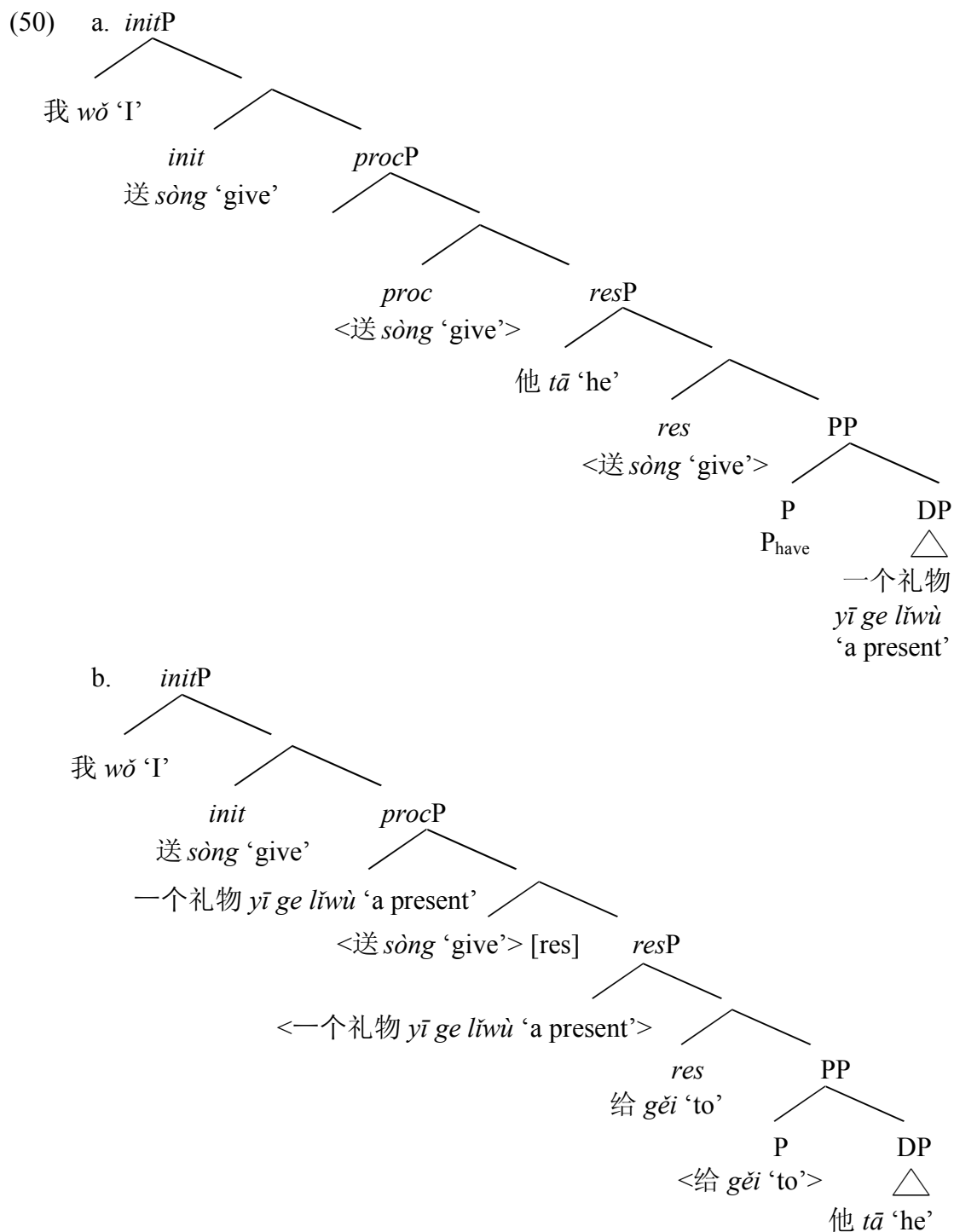
Following Ramchand's (2008) account of this kind of verbs in English, in the double object version (50a), differently from the dative variant (50b), the verb 送 *sòng* 'give' by itself identifies the *res* head and takes a stative PP complement, consisting of a null possessional P head and of a DP complement (cf. also Pesetsky 1995, Harley 2002 and fn.69). Moreover, Ramchand (2008) points out that in the double object variant (50b), while the first object (他 *tā* 'he') is the Resultee, it is not clear whether the semantics are consistent with the fact that 他 *tā* 'he' is the Undergoer (that is why we left the Undergoer position in 50a unfilled)[70]. Under Ramchand's account, the first object of the double object structure is an Undergoer, while the direct object of the dative version is an Undergoer-Resultee (for further discussion, cf. Ramchand 2008:103-105).

1.4.1.4 Stative verbs

Stative verbs are different from all other kinds of verbs since they are not dynamic and thus lack the *proc* projection, which is the heart of dynamic predicates. According to Ramchand (2008), stative verbs arise when an *init* head[71] does not select a process complement but rather selects rhematic material; the rhematic material can be a DP (*She loves pets*), an AP (*She looks young*) or a PP (*the two lines meet to the left*). Moreover, the *init* head can be filled with the phonologically impoverished verb *be*; in this case, the rhematic material is almost forced to appear in order to fully describe the state (*I am tired*; cf. Ramchand 2008:106). The *init* of stative verbs is not interpreted as causational, since it lacks a *proc*P as its complement, but as a state. If the verb has an internal argument, this argument is in the complement position and serves to further describe the state (without any path structure). The subject of *init*P is interpreted as the holder of the state (cf. Ramchand 2008:55).

Following this proposal, we can represent Chinese stative verbs, e.g. 爱 *ài* 'love', 恨 *hèn* 'hate', 会 *huì* 'be able to, understand, know', as in (51).

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[70] Ramchand (2008:103, fn.15) highlights that for Case reasons, the expression of a distinct Undergoer is impossible, thus it must remain implicit. If there is a notional Undergoer, it would have to be *the present* itself, even though she assumes that that particular relation is not directly represented in the double object structure.

[71] Ramchand (2008:107) assumes the presence of an initial head in statives for two reasons: 1) the DP argument in its specifier position is the entity whose properties are the cause or grounds for the stative eventuality to obtain; 2) stative verbs are able to assign accusative case to their objects, a characteristic that applies to the init head generally in dynamic predication as well.

(51) a. 他　爱　自己　　　的　孩子。

       tā　*ài*　*zìjǐ*　　*de*　*háizi*

       he　love　oneself　DE　child

       'He loves his own children.'

  b.

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              initP
             /     \
        他 tā 'He'   ‾init‾
                    /      \
                 init      DP/NP
              爱 ài 'love'    △
                      自己 的 孩子 zìjǐ de háizi
                            'his children'
```
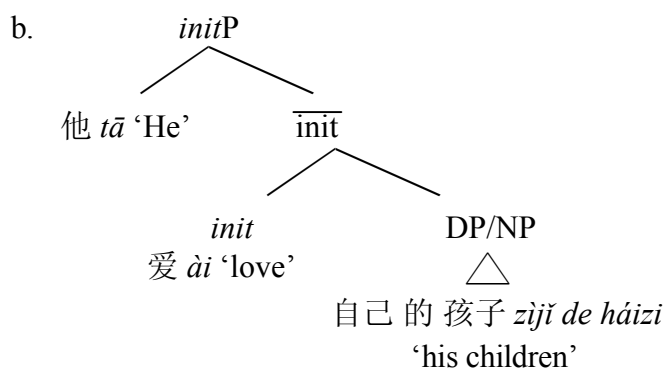
1.5 Aim of the research

Originating from the observation that verbal compounding in Chinese is peculiar, allowing the formation of both left-headed and right-headed structures, this research aims at providing an account of left-headed verbal compounds. The main hypothesis is that the difference between left-headed and right-headed compounds is structural in nature. The difference in the interpretations of right-headed and left-headed compounds would be triggered by different underlying structures. In this work we will show that left-headed compounds represent complex event structures, where the two constituents are arranged according to a functional hierarchical structure: Mandarin Chinese tends to lexicalize with different verbal roots what in other languages can be expressed by means of a single lexical item.

In particular, we will focus on the notion of causativity, showing that different languages may express it in different ways, according to the items available in their respective lexical inventories (cf. Ramchand 2008). We will then show that the tendency to express complex event structures by means of compounding results from the analytic nature of Mandarin. In this respect, it is important to consider the diachronic development of the Chinese language, which is apparently characterized by a typological shift from a synthetic to an analytic language and by a substantial change in its lexicon. This shows that the change in the available strategies in the language and in its lexicon caused a change in expressing the very same structures. In light of these considerations, left-headed verbal compounds seem to emerge from the need to compensate for the loss of other means to express complex event structures.

To this aim, we will take into account three types of causative compounds: compounds with a light V$_1$, resultative compounds and compounds expressing indirect causation, focusing mostly on the first two classes. We will provide an analysis of these forms based on Ramchand's (2008) syntactic decomposition of the event structure, which, as we have seen, consists in a functional hierarchical structure, characterized by a causal embedding of the subevents.

1.5.1 The data

The data for this research comes from different sources. Firstly, data have been collected from the quoted literature; for non-resultative [V V] compounds we have relied mainly on the huge set of data presented in Steffen Chung (2006). Another important source is Lü's (1981) 现代汉语八百词 'Eight hundred words in Contemporary Chinese'. Data have also been collected from various dictionaries: *The Contemporary Chinese Dictionary* (CCD 2002), which also includes a dedicated section on neologisms; the 文林 *Wénlín dictionary* (2007[1997]); 汉语动词用法词典 'A dictionary of the use of Chinese verbs' (HDYC 1999); the Nciku online dictionary, whose basic dictionary entries come from the Foreign Language Teaching and Research Press's Chinese-English and English-Chinese dictionaries, the Collins Chinese-English and English-English dictionaries, and from the 现代汉语规范词典 'A Standard Dictionary of Contemporary Chinese' (XHGC 2004). Data have been also drawn from contemporary literary texts and newspapers, mostly available on-line, and from two corpora of Mandarin Chinese: the Corpus of the Center for Chinese Linguistics at Peking University (PKU corpus) and, marginally, the Academia Sinica Balanced Corpus of Mandarin Chinese. Lastly, some data come also from Google searches. During the research, we have also sought information from native speakers, checking some particular aspects through their grammatical judgements, also by means of questionnaires. The informants were mainly graduate and post-graduate students, all L1 speakers of standard Chinese, but with different dialectal backgrounds and of different ages. Thus, we want to stress the fact that we did not build a statistically valid sample, since we were interested mainly in qualitative data on grammaticality judgements and, to this purpose, a balanced, representative sample is not necessary.

1.5.2 General outline

The thesis is organized as follows. In chapter 2, we provide the theoretical background for the analysis of causatives in Chinese, introducing the issue of the expression of causativity from a cross-linguistic perspective, the distinction between direct and indirect causation and the question of the causative alternation, with a particular attention on Ramchand's (2008) proposal for English alternating verbs.

In chapter 3, we provide a diachronic overview of the development in the ways to express causativity in Chinese, stressing the fact that at a certain point the Chinese language underwent a dramatic typological shift, from a synthetic to an analytic language. Following this typological shift, Chinese lost synthetic means to express causativity and was left only with syntactic means. At the same time, alternative analytic strategies to express causativity began to arise, e.g. the resultative construction and, later, resultative compounds.

In chapter 4, we illustrate one of the alternative analytical strategies that Chinese developed in order to express the causative alternation, namely the use of compound verbs with a phonetically realized light V_1, e.g. 弄 *nòng* 'make', 打 *dǎ* 'hit', 搞 *gǎo* 'do', and we show how the causative alternation works in Chinese; we focus particularly on the development of the root 打 *dǎ* 'hit' as a light verb. We also analyse the verbal root 加 *jiā* 'add; increase' as a light verb. Moreover, we also show a productive pattern of word formation, i.e. verbs formed with the suffix 化 *-huà* '-ize, -ify' and compare it with causativizing process by means of light verbs.

Lastly, in chapter 5 and 6 we present the much debated issue of resultative compounds in Chinese and we provide an analysis based on Ramchand's (2008) framework, which will also enable us to defend the position that resultative compounds are left-headed. Moreover, we introduce another type of causative compounds, which, according to us, express indirect causation. This kind of compounds seems to correspond to those termed 'double object type' by some authors (cf. 1.3.1). The possible V_1s occurring in this kind of compounds are from a restricted set, e.g. 请 *qǐng* 'ask', 劝 *quàn* 'advice/persuade', 助 *zhù* 'help', 逼 *bì* 'force', 迫 *pò* 'force', 禁 *jìn* 'prohibit'.

2. The expression of causativity

2.1 Introduction

A causative construction can be defined in terms of events. According to Parsons (1990), a causative denotes a complex event where an initial event brings about a resultant event. Frawley (1992:159) defines the two events involved as the 'precipitating event' and 'result'; Shibatani (1976:1) defines them as the 'causing event' and the 'caused event'. Causation involves an increase in valency by one (external) argument (cf. Comrie 1985:330-332).

Traditionally, a distinction is made between transitive verbs like English *break,* that express causative meanings, in the sense that the agent's action brings about a particular process leading to a change of state in the referent of a nominal object, and causative forms that are associated with a specific morpheme or construction type that have a certain degree of productivity, like English *make laugh* (cf. Shibatani & Pardeshi 2001:138-139); only the latter were called causatives. Shibatani & Pardeshi (2001) highlight that, although many languages make a distinction between transitive verbs (with a causative meaning) and causative forms, formally this distinction is not always clear-cut. For example, in some languages the same morpheme is used in forming what in other languages corresponds to a transitive verb (e.g. English transitive *break*) as well as that which corresponds to causative forms (e.g. English *make sb. laugh*), such as in Quechua *wañu-ci-* 'to kill' and *apa-ci-* 'to make someone carry something' (cf. Shibatani & Pardeshi 2001:139)[1].

According to Shibatani & Pardeshi (2001), perhaps the best way to posit a distinction between the two types is to contrast 'direct' and 'indirect' causation[2]: broadly speaking, direct causatives represent situations where the causee is conceptualized as a patient and does not act as a volitional entity, while indirect causatives express situations where the causee is an agent as well, a volitional entity

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[1] Shibatani & Pardeshi (2001:139) point out that "[e]ven in those languages that make a clear distinction between two types of causative, the productive type may be recruited to fill gaps in the lexical domain".

[2] Other terms proposed in the literature on the topic are 'contact' vs. 'distant' causation (cf. Nedjalkov & Silnitsky 1973, Masica 1976, Saksena 1982a) or 'manipulative' vs. 'directive' causation (cf. Shibatani 1975).

capable of executing a required activity. We will go back to this distinction in 2.3, for the moment we will broadly speak about causation, including both 'direct' and 'indirect' causation.

In this chapter we first provide a cross-linguistic overview of the different kind of causatives which can be found in the languages of the world: different languages can express causativity in different ways, according to the possibilities offered by the elements in their lexicon and morpho-syntax. We then explore the differences between direct and indirect causation and, finally, we address the issue of the causative alternation. After reviewing some of the main proposals on the direction of the causative alternation, we will focus on Ramchand's (2008) proposal. This will form the theoretical background for the analysis of causatives in Chinese.

2.2 Causatives: a cross-linguistic view

From a typological point of view, following the division proposed by Comrie (1981), causatives can be divided into analytic (or syntactic, periphrastic) causatives, morphological (or synthetic) causatives and lexical causatives.

Analytic causatives can be expressed in different ways (cf. Dixon 2000:34-37). One way is to use two verbs in one predicate, as for example the case of French, which has a causative verb *faire*[3], which seems to make up a single predicate with the following verb (cf. example 1, adapted from Dixon 2000:35)[4]:

(1) | *je* | *farai* | *manger* | *les* | *gâteaux* | *à* | *Jean* |
     | I | make+FUT+1SG | eat+INF | the | cakes | PREP | Jean |
     'I'll make Jean eat the cakes'

This kind of causatives is present in other Romance languages as well, such as Italian or Spanish.

Another analytic strategy consisting in two verbs forming one predicate is represented by compounding[5]. For example, Dixon (2000:35) points out the case of

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[3] As highlighted by Miller (1993:262-263), in French *faire* + verb does not act as though the verb is in a separate clause and it even shows compound-like properties (e.g. *faire* is not separable from the main verb: **lire ce livre a Marie, c'est ça que Jean veut faire* 'read this book to Mary, that is what Jean wants to have'). However, as highlighted by Kayne (1975), the construction can be separated by a negative particle, adverb or clitic pronoun (in the imperative construction). Therefore, *faire* + verb is not a morphological compound, but it is not a biclausal construction either.

[4] Comrie (1976: 262-263) notices that the causee cannot be placed between the two verbs but must follow the two verbs introduced by an oblique function, marked by the preposition.

[5] Actually, Dixon (2000) points out that one way to express causative situations is through serial verb constructions (i.e. two or more verbs in a clause that show the properties of a single predicate),

Kiowa (Kiowa - Tanoan family, south-west USA), where the transitive verb *ɔm* 'do, make' can be compounded with another verb to create a causative. See the example in (2), adapted from Watkins & McKenzie (1984:153) (cf. also Dixon 2000:35):

(2)   *bé-kʰó-ày-ɔm*
        2SG-now-start.off-CAUS+IMP
        'Go ahead and run it (the tape recorder)!' lit.: make it start off

Analytic causatives can also consist of a periphrastic construction, which involves two verbs in separate clauses, as the cases of English given below (3), where the causative verb is followed by a *to*-type complement clause.

(3)   a. *She caused the door to open.*
             b. *I forced him to go.*
             c. *I allowed the child to watch TV.*

The causee is the original subject of the subordinate clause but is marked for the accusative case, as the object of the causative verb[6].

In each case, as highlighted by Comrie (1985), in analytic causatives the predicate that expresses the idea of causation is separate from the predicate of the situation. Periphrastic causatives are considered bi-clausal expressions (cf. Radford 1988, Kozinsky & Polinsky 1993, among others) that encode the notions of Cause and Result in different clauses (cf. ex. 3), where the main verb expresses Cause, while the embedded verb expresses the Result (cf. Wolff 2003): two or more words are used to express a single meaning. Usually, it is assumed that periphrastic causatives are limited to a small set of words (cf. Shibatani 1976, Ammon 1980, among others): the most common are *make*, *get*, *have*, *let* and *cause*. However, more recent works (cf. Goldberg 1995, Wolff et al. 2002, among others) have highlighted that this class is larger. Furthermore, Wolff et al. (2002) show that the periphrastic causative verbs can be divided into three groups (English examples from Wolff 2003: 40): Cause-type verbs (4a), Prevent-type verbs (4b) and Enable-type verbs (4c)[7]:

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which do not use a strictly causative verb (i.e. a causative marker that does not have other meanings), as for example Panamese (an Austronesian language): 'they-hit pig it-die', i.e. 'they killed the pig by hitting it' (cf. Crowley 1987:43).

[6] While in English the causee is marked in the main clause, in other languages the causee can be marked differently: for example in Machushi (Carib family, Brazil) it is marked for its function in the subordinate clause, while in Candela-Kraho (Jê family, Brazil) it is marked for both of these (cf. Dixon 2000:36).

[7] Wolff (2003) adopts the theory of force dynamic first proposed by Talmy (1988). Adapting Talmy's theory (cf. Wolff et al. 2002), Wolff (2003:8) distinguishes the concepts of Cause and Enable

(4) a. *cause, bribe, compel, convince, drive, have, impel, incite, induce, influence,*
      inspire, lead, move, persuade, prompt, push, force, get, make, rouse, send,
      set, spur, start, stimulate
   b. *bar, block, constrain, deter, discourage, dissuade, hamper, hinder, hold,*
      impede, keep, prevent, protect, restrain, restrict, save, stop
   c. *aid, allow, enable, help, leave, let, permit*

In contrast, synthetic causatives are formed by morphological processes such as affixation or phonological alternation; for example, in Turkish the verb *öl* 'die' can be causativized by adding the suffix *-dür*, i.e. *öldür* 'cause to die' (cf. Wolff 2003:39). Morphological causatives are primarily found in all of Asia (except China), India, northeast Africa and some places in the Americas (cf. Masica 1976, Miller 1993). In this kind of causatives one member of the causative alternation (also called 'opposition', cf. Nedjalkov & Silnitsky 1973) is formally derived from the other (Nedjalkov & Silnitsky 1973 call this kind of alternation 'directed' or 'derivational' oppositions).

Strongly causativizing languages (i.e. those in which the formally marked member of the opposition is the causative one, while the basic form is the non-causative one), such as Indonesian, Japanese, Salish and all the languages of the Indian subcontinent (cf. Ramchand 2008) marks the causative member of the opposition by morphological means. For example, in Hindi/Urdu, the suffix *-aa* can be added to a verbal root to form its causative version, as in the examples in (5) adapted from Ramchand (2008: 156)[8]:

(5) a. *makaan   ban-aa*
        house   make-PERF.M.SG
        'The house was built.'
   b. *Anjum-ne   makaan   ban-aa-yaa*
        Anjum-ERG   house   make-CAUS-PERF.M.SG
        'Anjum built a house.'

In these languages, which possess causative morphemes, the direction of the semantic and formal derivation coincides (cf. Nedjalkov & Silnitsky 1973:2). However, morphological causatives can be marked by means other than affixation. For example, Marathi (a Neo-Indo-Aryan language) has lexical, morphological and

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(as well as Prevent) in terms of three main dimensions: (1) the tendency of the patient for a result; (2) the presence of opposition between the affector and patient; (3) the occurrence of a result.
   [8] As highlighted by Ramchand, the gloss in (5a) is given as passive, since in English the verb build cannot be intransitive. However, it should be noted that in Hindi/Urdu this form is not a passive, being a simple verbal root, with no additional morphology for marking passive (generally obtained by adding the light verb 'do').

analytic causatives. Among morphological causatives, the predominant means is suffixation, but other means are used as well, as shown in the examples in (6), from Shibatani & Pardeshi (2001:142-143)[9]:

(6)   a. Internal consonant change:
            phaaT-Ne ' to tear' (intr.)
            phaaD-Ne 'to tear' (tr.)
        b. Internal vowel change:
            mar-Ne 'to die'
            maar-Ne 'to kill'
        c. Internal vowel and consonant change:
            tuT-Ne 'to break' (intr.)
            toD-Ne 'to break' (tr.)
        d. Suffixation
            waaL-Ne 'to become dry'
            waaL-aw-Ne 'to dry'

Actually, most Indo-Aryan languages have synthetic causatives (cf. Bhatt 2003:1-2), which are expressed by different means, for example *ablaut* or vowel changing and suffixation (cf. examples in 7, from Bhatt 2003:2-3):

(7)   Ablauting or vowel changing:
        a. *Jaayzaad   bãṭ   rahii   hai.*
           Property   divide PROG-FEM   be-PRES
           'The property is dividing'
        b. *Ram-ne   jaay   bãã̃ṭ   dii*
           Ram-ERG   property   divide GIVE-PERF
           'Ram divided the property.'
        Suffix -*aa*:
        c. *Makaan   jal   raha   hai.*
           house.M   burn   PROG.M be.PRES
           'The house is burning.'
        d. *Ḍakaitõ-ne   makaan   jalaa   diyaa.*
           Bandits-ERG   house.M   burn   GIVE-PERF.M
           'Bandits burned the house.'

Conversely, in some languages there is a tendency to anticausativization (i.e. the formally marked member of the alternation is the non-causative one, that is the basic form is the causative one). Haspelmath (1993) notes that languages which prefer anticausatives are those spoken in Europe, thus such preference seems to be an European areal feature. See the example in (8) from Russian, adapted from Nedjalkov

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[9] Shibatani & Pardeshi (2001) point out that even though these forms are morphologically marked, they are qualified as lexical causatives, because they are not predictable on the basis of intransitive verbs; they must be learned individually and must be listed in the lexicon. Only the -*aw* suffix has a moderately high degree of productivity.

& Silnitsky (1973), where the non-causative member of the opposition is marked by the suffix -ся -*sja*.

(8)   a. ломать
           lomat'
           break
           'make broken'
        b. ломаться
           lomat'-sja
           break-ANTICAUS
           'become broken'

In some Romance languages too the inchoative version is formed by the verb plus a reflexivizing morpheme, such as Italian *si* (e.g. <u>*Ha rotto*</u> *il vaso* 'he broke the vase' vs. *Il vaso* <u>*si è rotto*</u> 'The vase broke') and French *se*.

In the case of anticausativizing languages, the direction of the semantics and formal derivation are opposed to each other (cf. Nedjalkov & Silnitsky 1973:2).

Some causative alternations are characterized by the fact that it is not formally obvious which member is the underlying one and which is the derived one. Verbs that exhibit this kind of opposition are called lexical causatives[10] and can be divided into 1) labile ('conversive syntagmatic oppositions' in Nedjalkov & Silnitsky 1973), 2) equipollent ('correlative oppositions' in Nedjalkov & Silnitsky 1973) and 3) suppletive (cf. Haspelmath 1993).

Labile alternations use the very same verbal root to express both meanings; it is the syntactic context which makes clear if the verb is causative or not, as in the examples in (9) from English, a language which shows an overwhelming preference for labile verbs (cf. Haspelmath 1993):

(9)   a. *The window broke.*
        b. *I broke the window.*

Equipollent alternations are characterized by a) the partial non-coincidence of their root morphemes, i.e. the two members of the alternation show different stem modification, as in the case of Lithuanian *lūž-ti* 'break (become broken)' vs. *lauž-ti* 'break' (cf. Nedjalkov & Silnitsky 1973:3), or by b) the same verbal root with

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[10] The term 'lexical causatives' has been used by Shibatani to refer to those forms which are irregular and have to be learned independently (and thus they are listed in the lexicon). However, Shibatani & Pardeshi (2001) consider irregular morphologically analysable forms to be lexical causative as well (cf. ex. 6 from Marathi above). Morphological causatives are restricted to causatives formed on regular and productive basis.

different affixes (one for the causative and one for the non-causative meaning), as in the case of Swahili *chem-k-a* 'boil' (intr.) vs. *chem-sh-a* 'boil' (trans.); in the latter case the difference with morphological causatives is evident, e.g. *chek-a* 'laugh' vs. *chek-esh-a* 'make laugh' (where *-esh* is the causative affix; cf. Nedjalkov & Silnitsky 1973:3).

Finally, in suppletive alternations the two members of the opposition differ in the complete non-coincidence of their root morphemes, as in the case of English *kill* vs. *die*.

Traditionally, a lexical causative verb is defined as a verb that expresses both the notion of Cause and of Result. Lexical causative verbs can be divided into those that express a change of state (10a) and those that express a change of location (10b), cf. Smith (1970), Levin (1993), Levin & Rappaport Hovav (henceforth, L&RH) (1994), among others (the examples are from Wolff 2003:40):

(10) a. *awake, balance, bend, break, burn, capsize, change, chill, clog, close, collapse, crack, crumble, decompose, deflate, defrost, degrade, dissolve, divide, drain, enlarge, expand, explode, flood, fold, freeze, hush, ignite, melt, open, pop, rip, reproduce, rupture, scorch, shatter, shrink, sink, snap, split, tear, thaw, topple*
      b. *bounce, coil, drift, drop, float, glide, move, revolve, roll, rotate, slide, spin, swing, turn, twirl, twist, whirl, wind*

In the next section we will address the issue of 'direct' vs. 'indirect' causation in more detail and the issue of the transitive alternation.

2.3 'Direct' vs. 'Indirect' causation

As we have already mentioned, causation may be distinguished in 'direct' vs. 'indirect' causation, according to whether the causer physically manipulates the causee in bringing about the caused event or not (cf. Kulikov 2001). Direct causation (or manipulative, cf. Shibatani 1976) is characterized by physical manipulation of the causee, which is normal when the causee does not act as a volitional entity: indeed, in manipulative causation the volition of the causee is absent and the causer must physically manipulate the causee (cf. Shibatani 1976). In contrast, in indirect causation (or directive, cf. Shibatani 1976), the causer is not physically involved in the execution of the caused event and the causee is a volitional entity. As observed by Verhangen & Kemmer (1997:67), indirect causation can be defined as a situation that

is conceptualized in a way that there is some force, other than the initiator, that is the most immediate source of energy in the effected event.

It has been claimed in the literature on the topic that direct causation requires temporal contiguity of the causing event and the result subevent (cf. Fodor 1970, Smith 1970, L&RH 1999). However, L&RH (1999:32) show that temporal contiguity does not always hold, e.g. *Terry shocked Sandy by deciding to run for office* (the act of deciding to run for office can precede the event). Therefore, L&RH (1999:33) suggest that the primitive for direct causation is the absence in the causal chain of an intervening event between the causing subevent and the result subevent[11]. In some cases, the absence of an intervening event is equivalent to temporal contiguity, as for example with verbs that describe physical changes by manipulation of physical objects (e.g. *break, shatter*). However, in the case of verbs of psychological change, a distant event can be the direct cause of change of state, without an intervening causing subevent; a change of psychological state can be directly brought about without direct contact between the cause and what undergoes the change of state (cf. L&RH 1999:33).

A similar account of direct causation is given in Wolff (2003). According to Wolff's 'no-intervening-cause criterion'[12], direct causation holds: "(1) if there are no intermediate entities at the same level of granularity as either the initial causer or final causee, or (2) if any intermediate entities that are present can be construed as an enabling condition rather than an intervening causer" (Wolff 2003:4-5). In causal chains with only two apparent entities, the relationship between the causer and the causee is direct if the causee is not also a causer, i.e. if the causee does not act as an intermediate causer upon itself.

Wolff (2003) points out that the causal chain is direct if the intermediaries can be construed as enabling conditions. In contrast, if the intermediaries cannot be construed as enabling the initial cause, then the chain is indirect: in this case the

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[11] However, Shibatani (1973) remarks that activities that are conventionally accomplished in a particular way may be expressed as simple causatives even if they describe indirect causation, in the sense that there is in actuality an intermediate cause, as in the case of the sentence *Farmer Joe grew those grape wines* (Goldberg 1995:169). Goldberg (1995:169), noticing this exceptions, concludes that simple causatives can be used to imply 'conventionalized' causation that may in actuality involve an intermediate cause: "Conventionalized scenarios can be cognitively packaged as a single event even if an intervening cause exist".

[12] As highlighted by Wolff (2003), the no-intervening-cause criterion is closely related to several other accounts of direct causation (e.g. DeLancey 1984, Goldberg 1995, Verhagen & Kemmer 1997; Rappaport Hovav & Levin 1999). In Wolff's analysis it is related to Talmy's theory of force dynamism (cf. fn.7).

intermediary is construed as a cause (i.e. an intervening cause); it has to be an entity completely independent of the causer and causee and is at the same level of granularity as that implied by the causer or causee. Wolff (2003:6) makes the example of someone who picks up a chair by grabbing the back of it and lifting it up: according to Wolff, even though the lifter's hand mediated between the lifter and the chain, the lifter's hand is not seen as an intermediary, because it is not fully independent of the lifter.

In indirect causation, the causee can be an agent with its own volition. Shibatani & Pardeshi (2001) highlight that, while in the case of direct causation, the causee is a patient and the caused event is completely dependent on the causer (causer controlled), in indirect causation, the caused event can have some degree of autonomy (causee controlled): although the causer is the entity responsible for the caused event, both the causing and the caused event have some degree of autonomy. The degree of autonomy is also related to the kind of indirect causation. For example, Shibatani (1976), among semantic parameters for the causative construction, distinguishes between: 1) coercive (or factitive, cf. Nedjalkov & Silnitsky 1973, Kulikov 2001) vs. noncoercive causation, i.e. the causer may force, persuade or suggest the causee to perform an act; 2) permissive vs. nonpermissive (ordinary) causation. In permissive causation, the causer can refrain from (or omit) prevention or intervention, actively give permission to the causee to do something, attempt (but eventually fail) to prevent something from happening, or s/he/it does not intervene in the caused event. Shortly, in permissive causatives the causer permits the causee to bring about the caused event without causing the causee to do so (cf. Kulikov 2001).

As observed by Kulikov (2001), a causative morpheme can have both permissive and coercive meaning (e.g. Georgian, Quechua, Turkish); Nedjalkov & Silnitsky (1973) point out that if a causative morpheme in a given language can express permissiveness, it can usually also express factitivity. Furthermore a verb of permission (e.g. English *let*) can develop into a non-permissive causative auxiliary (cf. Kulikov 2001).

Li F.X. (1991) assumes that direct and indirect causation form a continuum, from causer controlled causatives (direct causation) to causee controlled causatives (indirect causation, especially permissive). Li F.X. (1991) represents the difference in degree of causee control as a continuum (11):

(11)   COERCIVE > DIRECTIVE > IMPERATVE > ASSISTIVE > PERMISSIVE

force	*command*	*tell*	*cooperate*	*permit*
make	*order*	*say*	*help*	*allow*
do	*compel*	*send*	*give*	*let*

In English, the different degree of control can be expressed by various verbs (12), while in many languages the degree of control is encoded in the case marking on the causee:

(12)   a. *Illness caused him to retire.*
        b. *The authorities ordered him to leave the country.*
        c. *She told him to have a shower.*
        d. *He helped the prisoner to escape.*
        e. *The parents allowed the child to go to sleep any time the child desired.*

As highlighted by Nedjalkov & Silnitsky (1973), assistive causative ('assistance' or 'help' in their terms), which can be paraphrased as 'help to bring about V', 'assist at bringing about V' (cf. Kulikov 2001), stand apart both from the factitive and from the permissive causatives, but are nearer to the latter.

Kulikov (2001) points out a special subtype of indirect causation, i.e. the curative meaning, which can be paraphrased as 'ask someone to bring about V'. See the example in (13) from Finnish, adapted from Kulikov (2001:892):

(13)   a. *ūnt (u)* 'sit down'
        b. *ūnt-t (u)* 'seat'
        c. *ūnt-t-u-pt (a)* 'ask to sit down'

Kulikov (2001) highlights that few languages distinguish between other (very subtle) types of indirect causation. For example, Naukan Eskimo has several curative affixes (which actually correspond to different meanings in the continuum in (11)), e.g. *–njka-*, *-sihjka-* 'ask to do something'; *-hjqur (a)-* 'order to do something'; *-hjqusar (a)-* 'persuade to do something' (cf. Manovščikov & Xrakovskij 1970).

Kulikov (2001) points out that, typically, indirect causatives are more complex from the morphological point of view. For example, in languages that have affixes both for direct and indirect causatives, the more complex affix is used to express indirect causation. For instance, in Hindi the suffix *-aa* express direct causation, while the suffix *-vaa* (*-v + -aa*) expresses indirect causation (c.f. Saksena 1982b, Butt 1998, Ramchand 2008); the indirect causative suffix seems to "contain" the direct causative suffix. See the example in (14), from Ramchand (2008:162):

(14) a. *Anjum-ne   makaan ban-aa-yaa*
          Anjum-ERG house   be made-*aa*-PERF.M.SG
          'Anjum built a house.'
      b. *Anjum-ne* (*mazdurõ-se*)   *makaan   ban-vaa-yaa*
          Anjum-ERG labourers-INSTR house   be made-*vaa*-PERF.M.SG
          'Anjum had a house built by the labourers.' (from Butt 2003)

Some Bantu languages too distinguish between direct and indirect causativization by means of different dedicated affixes. See the examples in (15), adapted from Good (2005:8):

(15) Nkore
      a. *-ham-a*   'be assured-FV = be assured'
      b. *-ham-**y**-a*   'be assured-TRANS-FV = confirm'
      c. *-ham-**is**-a*   'be assured-CAUS-FV = make confirm'
      Nyoro
      d. *-og-a*   'bathe-FV = bathe'
      e. *-og-**y**-a*   'bathe-TRANS-FV = wash'
      f. *-og-**is**-a*   'bathe-CAUS-FV = make wash'

Many researchers (cf. Smith 1970, Shibatani 1976, McCawley 1978, Dowty 1979, Comrie 1985, Croft 1991, Kemmer & Verhagen 1994, Kozinsky & Polinsky 1993, L&RH 1994, among others) have pointed out that causal chains that can be described by single-clause expressions tend to express direct causation, where there is a direct relation between the causer (subject) and the causee (object): thus, if there is a lexical causative, it expresses direct causation (cf. McCawley 1978:26). In contrast, bi-clausal expressions (e.g. periphrastic causative) tend to be used to express indirect causation. For example, if you want to express a situation where someone turns a knob and pushes a door, which then opens, in English you can say *He opened the door* (lexical causative) or *He caused the door to open* (periphrastic causative), but if you want to express the situation in which someone lifts up a window, letting breeze enter the room, and the door consequently opens, you can only say *He caused the door to open* (cf. Wolff 2003)[13].

The greater linguistic complexity for indirect causation has to do with iconicity in causatives, which is concerned with the correspondence between linguistic and conceptual distance. Conceptual distance is represented by directness or indirectness

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[13] However, even though bi-clausal expressions seems to be preferred to express indirect causation, indirect causation too can be expressed by single-clause expressions, in particular by means of verbal affixation as we have pointed out in the examples in (14) and (15) above.

between Cause and Result, while the linguistic distance is the distance between two grammatical structures, which according to Haiman (1983: 782) is:

> "[...] least when they are fused in [the same morpheme]; greater when they are distinct but bound morphemes; and still greater when they are separate words. The linguistic distance between them is greatest of all when they are separated by one or more other words." (Haiman 1983:782)

According to Haiman (1983:782-783), the linguistic distance between two expressions corresponds to the conceptual distance: thus, the greater the conceptual distance is, the greater is the linguistic distance. Since direct causation has a lesser conceptual distance between cause and result than indirect causation, it will have lesser linguistic distance as well. Thus, the most conceptually direct causation is expressed by the least linguistically distant clause types; the least conceptually direct causation is expressed by the most linguistically distant clause types.

Comrie (1981) argues for a very similar point: he assumes that direct and indirect causation form a continuum (cf. also Li F.X. 1991 and above), from less direct to more direct causation. This continuum correlates in languages with the formal continuum from analytic causative via morphological to lexical causative: lexical causatives are associated with direct causation, while analytic causatives with indirect causation. However, each language may vary as far as the degree of direct causation denoted by different points along the analytic-to-synthetic continuum is concerned: each language can differ in what can be expressed by a single-clause expression (thus in what can be considered as direct causation)[14].

Dixon (2000) illustrates a continuum in the formal expression of causative based on 'compactness'. The kind of causative mechanisms are as follows (16):

(16)   LEXICAL CAUSATIVES (more compact) > MORPHOLOGICAL CAUSATIVES
        (affixation, internal or tone change, lengthening reduplication) > COMPLEX
        PREDICATES (two verbs in one predicate, including serial verbs, French *faire*
        and compounding) > PERIPHRASTIC CONSTRUCTIONS (two verbs – a causative
        less compact and a lexical verb – in separate clauses).

Dixon highlights that the degree of compactness correlates with various semantic parameters. As far as the directness (direct vs. indirect causation) parameter is concerned, he assumes a view in line with Haiman's (1985) iconicity principle and

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[14] Van Voorst (1996) states that English is the least restrictive in this respect, followed by French, then Dutch. In Dutch, for example, situations that can be referred to by a single-clause expression may be limited to those involving proximate causation, i.e. causation in which there are no intermediaries.

Comrie's (1981) observations: the direct value of the parameter (i.e. more direct causation) is always marked by the more compact mechanism, while the negative value (i.e. indirect causation) is marked by the less compact one.

However, Shibatani & Pardeshi (2001) highlight that these correlations usually hold only in single languages and cannot make cross-linguistic predictions. Moreover, even within the same language, these correlations may not be found. First of all, as we have seen (cf. exx. 14 and 15), languages can express both direct and indirect causation by means of the same morphological mechanism (even though often the most complex affix forms indirect causatives). Moreover, Shibatani & Pardeshi (2001) observe that in Japanese the correlation holds as far as lexical causatives and productive morphological causatives are concerned: lexical causatives express direct causation, while productive morphological causatives with *-sase* (/*-se*) express indirect causation (e.g. 見させる *mi-sase-ru* 'make-CAUS-NONPAST = see', 書かせる *kaka-se-ru* 'write-CAUS-NONPAST = cause to write'; cf. Shibatani & Pardeshi 2001:160). However, Japanese has irregular morphological causatives too (e.g. 乾かす *kawak-as-u* 'dry-E-NONPAST = dry (tr.)', 開ける *ak-e-ru* 'open-E-NONPAST = open (tr.)', 落とす *ot-os-u* 'drop-OS-NONPAST = drop (tr.)', cf. Shibatani & Pardeshi 2001:158). According to Dixon (2000), these irregular morphological causatives are more compact that the regular ones (i.e. the *-sase* forms) but less than lexical causatives. However, as Shibatani & Pardeshi (2001) notice, they align with lexical causatives, since they do not express intermediate meaning and have direct causative function (cf. also the irregular morphological causatives in Marathi, ex. 6).

Shibatani & Pardeshi (2001) also notice that Amharic has pure lexical causatives, morphological causatives and periphrastic causatives (cf. Amberber 2000). Within morphological causatives, those formed with the prefix *-a* apply only to inactive intransitives and express direct causation, while the more productive *as*- causatives express indirect causation. The fact that the simpler affix (more compact) forms correlate with direct causation, while the more complex (less compact) forms correlate with indirect causation seems to confirm Dixon's (2000) assumption. However, Shibatani & Pardeshi (2001) notice that the morphological causatives do not form a group but align with the other two types (lexical and periphrastic) along the productivity parameter. This has led Shibatani & Pardeshi (2001) to correlate direct and indirect causation with productivity: less productive forms (lexical and

irregular morphological forms) express direct causation, while more productive forms express indirect causation.

However, the case of Hindi cited above (cf. ex. 14) does not seem to confirm this hypothesis. As we have seen, -*vaa* causatives are considered to express indirect causation; Shibatani (1973) analyses -*vaa* as a syntactic causative, Kachru (1980) coniders it a 'second' causative, contrasting with the more 'lexical' or 'first' causative -*aa*. However, Ramchand (2008) shows that there is neither actual direct morphological recursion nor productive semantic recursion involving the two suffixes. Moreover, according to Ramchand (2008), there is no evidence that the -*vaa* suffix is more syntactic: the two are both equally morphologically productive and, apparently, -*aa* suffixed verbs (direct causatives) and -*vaa* suffixed verbs (indirect causatives) have no clear difference in distribution, being able to attach to the same bases[15] (apparently both transitive and intransitive alternants are input to -*aa* and -*vaa*). Moreover, not all verbs allow an -*aa* causative and not all verbs allow a -*vaa* causative (cf. Saksena 1982b, Butt 1998, Butt & King 2006).

Therefore, even though there is a tendency in expressing direct causatives with more lexical and 'compact', less productive forms, and indirect causatives with less compact and more productive periphrastic forms, this separation is not straightforward and depends also upon language specific characteristics. Indeed, McCawley (1998 [1978]) points out that periphrastic causatives can express either direct or indirect causation. He takes the following couple of examples from Katz (1970): *He caused the sheriff to die* (periphrastic causative) vs. *He killed the sheriff* (lexical causative). He points out that it is more natural to refer the periphrastic causative to a situation where someone has tampered with the sheriff's gun with the result, that in a shoot-out with an outlaw, the sheriff gun fails to shoot and the outlaw shoots the sheriff to death. McCawley assumes that the fact that the periphrastic causative is used to express indirect causation is due to conversational implicature, since lexical causatives are assumed to have a meaning linked to direct causation;

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[15] Moreover, in many cases -*aa* suffixation and -*vaa* suffixation can both be applied, producing forms that seem synonymous; besides, both forms allow the addition of an instrumental -*se*- marked intermediate agent. This happens when suffixation applies to roots with transitive meanings, like *kaaT*- 'cut' (cf. Ramchand 2008:162). However, Butt & King (2006) highlight that transitives are usually related to an intransitive verb root. For example, the transitive kaaT 'cut' is actually related to an intransitive verb root *kaT* 'be cut' via 'vowel strengthening'. According to them, the -*aa* / -*vaa* causative is added to the intransitive form of the root. The precise morpho-phonological factors involved in causation are not yet clearly explained.

therefore, it would be inappropriate for the periphrastic causative to express the situation in which someone shoots the sheriff to death, since there is an alternative available, namely the lexical causative, which has a simpler surface structure. However in a situation such as *Black Bart caused the sheriff to die* is still possible to answer 'yes' to the question: *Did Black Bart cause the sheriff to die? Yes / *No, he shot him through the heart and the sheriff died instantly* (McCawley 1998 [1978]:336). Therefore, McCawley claims that verbs such as *cause* and *make* are neutral as far as directness of causation is concerned but are given an interpretation of indirect causation through conversational implicature. This has an interesting implication, namely that periphrastic causatives can be used for direct causation in the absence of lexical causatives, thus it depends on the alternatives provided by the lexicon, "i.e. whether a periphrastic causative is interpreted as referring to indirect causation depends not only on its own meaning but on what alternatives the lexicon provides for referring to the events in question" (1998 [1978]:336). Therefore, the possible interpretations of a particular construction may depend on what kind of alternatives a language provides for expressing certain types of events.

2.4 The causative alternation

One of the biggest problems related to causativization/transitivization in the recent literature concerns the direction of the derivation of the alternation. As we have seen in the previous section, many languages show a wide range of causative forms: causatives may be formed from different kind of verbal roots, including transitive ones (cf. Haspelmath 1993:92). According to Haspelmath (1993), while causative formed from unergatives or transitives (verbs possessing an [init] feature in Ramchand's (2008) framework, e.g. *write*, *work*; cf. 1.4) are never expressed cross-linguistically as anticausatives, or as non-derived alternation, the inchoative-causative alternation is more problematic.

The inchoative-causative verb pair is defined semantically (cf. Haspelmath 1993:90), as a pair of verbs which express the same basic situation (usually a change of state but sometimes also a non-agentive activity[16]) but differ in that, while the causative verb meaning includes an agent participant who causes the situation, the

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[16] Atelic on-going, as for example: *the top is spinning* vs. *the child is spinning the top*.

inchoative verb presents the situation as occurring spontaneously without the help of a causative agent, as shown in (17):

(17)　　a. *The child broke the window* (*with a stone*).
　　　　b. *The window broke* (**with a stone*).

It should be noted that the inchoative version is similar to the passive of the causative verbs (i.e. *The window was broken* (*with a stone*)); however, it differs from the passive in that it is not the case that the agent is simply unexpressed, but rather the action is conceived as happening spontaneously, without an agent (cf. Haspelmath 1993, cf. also paragraph 2.4.2 and fn. 20).

In English, verbs which participate in this alternation, e.g. *break, sink, open*, etc., show both transitive and intransitive uses, and the transitive use means something like 'cause to [V$_{\text{INTRANS}}$]' (cf. L&RH 1995:79). English verbs that show such alternation, thus, are mainly labile verbs (cf. 2.2), but in some languages, as we have seen, one member of the alternation is morphologically marked.

According to L&RH (1995), the semantic relationship between the two forms involved in the alternation is reflected by the fact that the subject of the intransitive variant and the object of the transitive variant have the same semantic role. The verb of the intransitive variant has been claimed to be an unaccusative verb; indeed, many of the verbs which are considered to be prototypical unaccusatives, i.e. verbs of change of state, such as *break, dry*, etc., participate in the alternation. Therefore, before going on with the discussion on the inchoative-causative alternation, in the next section we address the issue of unaccusativity.

2.4.1 Unaccusative verbs

Perlmutter (1978) put forth the Unaccusative Hypothesis, which posits the existence of two kinds of verbs: unergative and unaccusatives. According to the Unaccusative Hypothesis, the subjects of certain intransitive verbs originate as underlying objects (unaccusatives), while subjects of other intransitive verbs originate as underlying subjects (unergatives). In terms of argument structure, an unergative verb is a verb that takes an external argument but no internal arguments, while an unaccusative verb is one that takes an internal argument but not an external argument. Burzio's (1986) generalization states that a verb assigns accusative Case if and only if it assigns an external θ-role. Therefore, if a verb does not take an external argument, it cannot

assign structural Case: unaccusative verbs are unable to take an object with accusative Case, i.e. they are unable to assign structural Case to their object. According to this view, the difference between unergatives and unaccusative verbs is represented as follows (cf. L&RH 1995:3):

(18)   a. Unaccusative verbs (e.g. *arrive*):
            ____[$_{VP}$[V NP/CP]]
        b. Unergative verbs (e.g. *run*):
            NP [$_{VP}$ V]

According to Perlmutter (1978), lexical unaccusatives typically involve motion, state or change of state. Moreover, their subjects are less agentive/volitional than unergative subjects. Apparently, unaccusative verbs share many syntactic properties cross-linguistically, which has led many scholars to think that the Unaccusative Hypothesis is universally valid. Generally, syntactic approaches to unaccusativity (e.g. Rosen 1984; cf. L&RH 1995:5-9), indeed, consider unaccusativity as an unified phenomenon, i.e. all unaccusative verbs, independently from their semantic class have some syntactic properties in common, as we have seen above: the selection of an internal argument, the lack of an external argument and the inability to assign accusative case.

However, despite the evidence in many languages, some scholars are not convinced of the cross-linguistic validity of the Unaccusative Hypothesis. For example, Mithun (1991) calls into question the basic lexical distinction between unergative and unaccusative verbs, since she notices that in many languages those effects which are related to unaccusativity are not linked to lexical properties of the verb but rather to the relative animacy of argument and aspect. From an aspectual point of view, unergatives tend to refer to atelic events or activities (cf. Van Valin 1990, Grimshaw 1990), while unaccusatives usually denote a telic event.

From a semantic perspective, the difference between unergatives and unaccusatives is linked to the difference between the thematic functions realized by the single argument of the verb: typically, the argument of unergative verbs has agentive properties, e.g. control and intentionality, whereas the argument of unaccusative verbs is typically a theme affected by an unintentional and/or uncontrolled change of state or location. According to the semantic approach (cf. Van Valin 1990, among others), unaccusativity is not an unified phenomenon and a single verb can be considered as unaccusative according to one diagnostic but unergative

according to another one (cf. Dowty 1991). It has been proposed that auxiliary selection (which has been considered a diagnostic[17] of unaccusativity in Germanic and Romance languages, cf. Burzio 1986, Legendre 1989, Hoekstra 1984, 1999 among others) is determined by semantic factors, including aspectual properties and thematic relations, such as telicity and agentivity (Sorace 2000), lexical aspect for Italian (Van Valin 1990), telicity for Dutch (Zaenen 1993), inferable position or state for Dutch (Lieber & Baayen 1997), and patient-like (affected) subject for Old Spanish (Aranovich 2004). In the semantic approach, verbs that select the auxiliary 'be' are not necessarily assigned an underlying object; these verbs share properties that are characterized in semantic terms (cf. Liu 2007). Furthermore, the choice of auxiliary apparently is not always clear-cut, but is gradable (Sorace 2000, Aranovich 2004).

According to L&RH (1995), although unaccusative verbs are all assumed to share the same syntactic representation (cf. ex. 18), they do not form a semantically homogeneous class, but can be divided in several subclasses: verbs of change of state (e.g. *break*, *melt*, *open*), verbs of appearance (e.g. *appear, arrive*), verbs of existence (e.g. *exist*, *remain*). Therefore, L&RH (1995) assume that unaccusatives are represented syntactically but determined semantically.

L&RH (1995) divide verbs into internally caused and externally caused ones. In internally caused verbs, some property inherent to the argument of the verb is what brings about the eventuality. In the case of agentive verbs, this property is the volition of the agent who performs the activity. In the case of verbs like *blush* or *shudder*, eventualities arise from internal properties of the arguments, typically an emotional reaction. In the case of verbs of emission[18] too, like *sound*, *light* or *smell*, the eventuality is brought about by inherent properties of their arguments. In contrast, L&RH (1995) assume that externally caused verbs, e.g. *break*, *melt* and *open*, are

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[17] Unaccusativiy diagnostics are not necessarily cross-linguistically valid. Each language may have particular types of diagnostics (cf. Alexiandou et al. 2004). Among diagnostics, we find (cf. Alexiandou et al. 2004): auxiliary selection in most Romance and Germanic languages (cf. Perlmutter 1989, L&RH 1995, Chierchia 2004, Sorace 2000, 2004, among others); past participle of the verb can occur as an attributive predicate of the noun corresponding to its direct object (cf. Hoekstra 1984, Grimshaw 1990, among many others), e.g. Ger. *Der engleschefene Student* 'the fallen asleep student'; *ne*-cliticization in languages such as Italian (cf. Belletti & Rizzi 1981, Burzio 1986, among others); the impersonal passive (cf. Perlmutter 1978, Zaenen 1993); possibility to appear in the resultative construction (cf. L&RH 1995, Rappaport Hovav & Levin 2001, among others). Several authors have tried to give a list of diagnostics for particular languages (cf. Alexiandou et al. 2004:6-8 for a list of some authors and examples).

[18] Perlmutter (1978:163) describes these verbs as verbs of "non-voluntary emission of stimuli that impinge on the senses".

characterized by the presence of an external cause (an agent, an instrument, a natural force, or a circumstance) which has immediate control over the eventuality described by the verb. L&RH point out that although it might be possible to conceive an externally caused verb like *break* as happening spontaneously, it is more natural to conceive the situation with *by itself* (which cannot occur with internally caused verbs in the 'without help sense'), as shown by the examples in (19):

(19)　　a. *The stick broke by itself.*
　　　　b. **The diamond glowed by itself.*
　　　　(From L&RH 1995:93).

Therefore, externally caused verbs can be used intransitively without the expression of an external cause, but it is our knowledge of the world that exclude that they could happen without an external cause.

L&RH's (1995) division into internally and externally caused verbs partially relies on Smith's (1970) proposal based on control. Smith (1970) proposes that verbs like *break* and *open* describe eventualities that are under the control of some external cause that brings the eventuality about. These intransitive verbs have transitive uses, where the external cause is expressed as subject. Verbs like *laugh*, *play*, *speak*, *blush* and *shudder*, in contrast, do not have this property; they describe eventualities that cannot be externally controlled but can be controlled only by the person engaging in it (cf. Smith 1970:170).

L&RH (1995) point out that externally caused unaccusative verbs regularly have transitive causative uses, while unergative verbs, largely agentive and internally caused, normally do not admit causative uses. The core class of causative alternation verbs are verbs of change of state, like *bake*, *break*, *open*, *melt*, and also like *roll*, *move*, *rotate*, i.e. verbs of change of position that need not to be agentive[19].

In English many alternating verbs of change of state are deadjectival (cf. Levin 1993:28). These verbs are divided into two groups: the zero-related to adjectives, e.g. *brown*, *clean*, *thin*, *smooth*, *dry*, *narrow* etc., and verbs formed from adjectives through the use of the suffix *-en*, e.g. *awaken*, *broaden*, *widen*, *soften*, *moisten*, etc.

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[19] L&RH (1995) claim that some components of the meaning, such as telicity and change of state, are syntactically relevant to the determination of unaccusativity, thus the mapping from lexical semantics representation to syntax is a many-to-one mapping. The semantic properties of the verb, according to them, may be a necessary, but not a sufficient, condition for passing an unaccusative diagnostic (cf. L&RH 1995:14), thus not all unaccusative verbs are expected to pass all unaccusative diagnostics.

(cf. L&RH 1995:95-96). As highlighted by L&RH (1995), these adjectives form the basis for alternating verbs of change of state, supporting the proposal that such verbs are externally caused. We will go back to the issue later on, when talking about Mandarin deadjectival verbs (chapter 4).

In the following section, we discuss in more details the issues related to the inchoative-causative alternation.

2.4.2 The inchoative-causative alternation

In the previous section we have shown that verbs that show the inchoative-causative alternation are unaccusative, externally caused verbs. In this section we address the issue of the derivation of this alternation. As we have mentioned at the beginning of section 2.4, in the literature on the topic there is no agreement on the direction of the derivation of the inchoative-causative alternation.

L&RH (1995), Reinhart (2002) and Chierchia (2004 [1989]) agree in deriving the inchoative-causative alternation from a fundamentally transitive frame: according to this view, the intransitive form of a verb like *melt* is derived by an 'arity' operation, i.e. an operation that affects the syntactic valence of the verb, from the transitive basic entry of the verb, in a similar way as in the case of passives (cf. Reinhart & Siloni 2005). While in the passive form of the verb, the arity operation disables the syntactic realization of the argument corresponding to the Agent θ-role, but this role is not eliminated and still assigns the role in the semantics, in the unaccusative form the arity operation eliminates the theta-role all together (cf. example 20, from Reinhart & Siloni 2005)[20], i.e. there is a decausativization mechanism:

(20)   a. *The ice$_i$ was melted* t$_i$ (*with a candle*).
         b. *The ice$_i$ melted* (**with a candle*).

L&RH (1995) agree with these authors in considering unaccusative verbs as basically causative; they assume a single lexical semantic representation (a causative one) for both the transitive and the unaccusative form of these verbs. According to them, these verbs have a dyadic lexical representation, but under certain circumstances they can express only the internal argument and are realized as

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[20] One of the ways to test the difference is by adding an Instrument. A passive can occur with an Instrument (20a), which is generally licensed only if an Agent role is available in the semantic representation. In contrast, with an unaccusative verb (20b), no Instrument can be licensed, since the external role of the transitive entry is completely eliminated (cf. Reinhart & Siloni 2005:399).

monadic predicates in the syntax (21a). In contrast, unergative verbs have an inherently monadic representation (21b):

(21)   a. *break*: [[*x* DO-SOMETHING] CAUSE [*y* BECOME *broken*]
        b. *walk*: [*x walk*]

As it can be seen from the representation in (21a), for an alternating verb is assumed a complex lexical semantic representation formed by two subevents linked by a causal relation. This bi-eventive analysis presents a causing subevent and the subevent that specifies the change associated with the verb (cf. also Dowty 1979, Pustejovsky 1991). In contrast, unergative (non-alternating intransitive) verbs are basically monadic and do not have the predicate CAUSE in their representation (21b), which is why they do not have a causative variant[21].

The first argument L&RH (1995) provide in favour of this analysis of alternating verbs comes from the observation that the selectional restriction on the object (in the transitive use) and on the subject (in the intransitive use) do not coincide for any verb; however, the set of possible subjects for the intransitive variant of a verb apparently is a subset of the set of the possible objects for the transitive use of the same verb[22]. See the examples in (22) and (23) from L&RH (1995:85):

(22)   a. *Antonia broke the vase / the window / the bowl / the radio / the toaster.*
        b. *The vase / The window / The bowl / The radio / The toaster broke.*
        c. **Antonia broke the cloth / the paper / the innocence.*
        d. **The cloth / The paper / The innocence broke.*

        BUT:
        e. *He broke his promise / the contract / the world record.*
        f. **His promise / The contract / The world record broke.*

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[21] Recall that Hale & Keyser (1993, 1998, 2002) consider unergative and transitive verbs as having the same structure (cf. chapter 1, fn.61), i.e. an "lp-monadic structure" (in relation to the arguments which must appear internal to the lexical configuration associated with a lexical item, not in relation to syntactic adicity): the argument structure configuration projected by the head contains just one argument, i.e. the complement. In contrast, unaccusative verbs like *break* are characterized by a dyadic type configuration and have a specifier (i) (cf. Hale & Keyser 1998, 2002).

(i)   Head
           /\
      Spec   Head
              /\
       Head   Comp
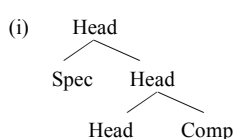
[22] This is due to the fact that with certain objects the eventuality described cannot come about without the intervention of an agent (detransivization is possible where an externally caused object can come about without the intervention of an agent) (cf. also Haspelmath 1993).

(23) a. *Jean opened the door / the window.*
b. *The door / The window opened.*

BUT:
c. *This book will open your mind.*
d. **Your mind will open from this book.*

L&RH (1995) assume that the basic variant of the verb is the one which imposes less selectional restrictions; if it were the other way around, they claim that it would be difficult to derive the variant with the looser restrictions in a plausible way. Therefore, according to this view, the causative variant is the basic form, i.e. the one with the looser selectional restrictions.

The other argument in favour of this analysis comes from Chierchia (2004 [1989]), who points out that unaccusative verbs that lack a paired transitive use, e.g. *come*, are exceptional and would be expected to have such a use, since they are basically dyadic. He suggests that a verb like *come* is related to a causative verb meaning something like 'bring', but this causative verb is either not lexicalized or lexicalized by a verb not morphologically related to the intransitive use[23]. Chierchia (2004 [1989]) assumes that these verbs, diachronically and across dialects, tend to oscillate in valency from transitive to intransitive and vice versa; he cites an Italian unaccusative verb, *crescere* 'grow', which, according to him, in standard Italian lacks the causative variant, stressing that in some dialects it has a causative use, with the meaning 'raise (children)'[24]. Examples of this type can be easily found across dialects. In some Italian dialects (e.g. Sicilian), for example, unaccusative verbs like *entrare* 'enter', *uscire* 'exit', *scendere* 'descend; go down', which in standard Italian are only intransitive, can be used transitively (24):

(24) a. *Mamma ha uscito la carne dal frigo per il pranzo.*
mother exited the meat from fridge for the lunch
'Mom took out the meat from the fridge for lunch'

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[23] In other languages this alternation ('come'-'bring') can be expressed by the same verbal root, i.e. by a lexical causative. For instance, in Chinese the verb 来 *lái* means both 'come' and 'cause to come, send (here), bring', apparently acting as an alternating verb (cf. Lü 1980:252): 客人来了 *kèren lái le* 'guest come ASP = The guests are here' vs. 他来过两封信 *tā lái guo liǎng fēng xìn* 'he come ASP two CL letter = He sent (here) two letters', 请再来一瓶啤酒 *qǐng zài lái yī píng píjiǔ* 'please again come one CL beer = bring me another bottle of beer, please' (cf. also chapter 4, exx. 20a-c).

[24] In standard Italian, the verb crescere 'grow' actually has a causative variant. *De Mauro – Il dizionario della lingua italiana per il terzo millennio* (DM 2000) registers three transitive uses of c*rescere*: 1) allevare, educare 'raise (children)'; 2) far diventare più grande; accrescere, aumentare 'make grow; increase' (not frequent); 3) nei lavori a maglia: aumentare 'add, increase (in knitting)' (cf. also Sabatini Coletti: Dizionario della lingua italiana, SC 2008).

b. *Ho entrato la   macchina nel garage.*
   entered-1SG the   car   in garage
   'I put the car in the garage.'
c. *Mi scendi   le   chiavi   per favore?*
   me descend   the   keys   please
   'Can you please bring me the keys (downstairs)?'

L&RH (1995:87) point out a similar example in English, where the verb *deteriorate*, usually intransitive, is used transitively: *The pine needles were deteriorating the roof.* Chierchia (2004 [1989]) points out that unergative verbs, in contrast, are "stable" and are not expected to show the alternation, since they are inherently monadic.

Moreover, L&RH (1995) highlight the fact that Nedjalkov (1969), in a survey on sixty languages on the behaviour of the verbs *break* and *laugh*, found out that in most languages the transitive form of the verb *break* is unmarked, while the intransitive form is identical to the transitive form (i.e. labile verbs) or derived from the causative form. The fact that the intransitive form is morphologically marked apparently confirms that these verbs are basically causative, whereas their intransitive use is derived: the morphological marking indicates the non-expression of the external cause. In contrast, in the majority of languages observed by Nedjalkov (1969), the causative form of *laugh* is morphologically more complex than the non-causative form (cf. also Haspelmath 1993). According to L&RH, this is due to the fact that these verbs are inherently monadic verbs, whose lexical semantics lack a causative predicate.

Finally, the causative analysis is supported by Chierchia's (2004 [1989]) remark about Italian: according to Chierchia, the use of the adverbial *da sé* 'by itself' (i.e. 'without outside help')[25] reflects the presence of a cause argument in the lexical representation of the verb (cf. ex. 25, from Chierchia 2004 [1989]:43):

(25)   a. *La porta si è aperta   da sé.*
       The door   opened   by itself
       'The door opened by itself.'

Apparently this adverbial modifies a cause, which identifies itself as the theme argument. The intransitive verbs that do not participate regularly in the alternation do not appear with this adverbial (cf. L&RH 1995). Actually, unergative verbs in English

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[25] In English *by itself* can mean both 'without help' and 'alone'. With the unaccusative form of alternating verbs it means 'without help'.

can appear with *by itself* adverbial, but in the sense of 'alone' (cf. fn. 25), e.g. *She walked by herself* (i.e. unaccompanied).

Having assumed that alternating verbs have a dyadic lexical semantic representation (LSR), the unaccusative form is assumed to be derived from an operation of detransitivization, as described in (26), from L&RH (1995:108)[26]:

(26) a. Intransitive *break*

      LSR   [[*x* DO-SOMETHING] CAUSE [*y* BECOME *broken*]]

                                 ↓

      Lexical binding   Ø
      Linking rules   ↓
      Argument structure   <*y*>

 b. Transitive *break*

      LSR   [[*x* DO-SOMETHING] CAUSE [*y* BECOME *broken*]]
      Linking rules   ↓   ↓
      Argument structure   *x*   <*y*>
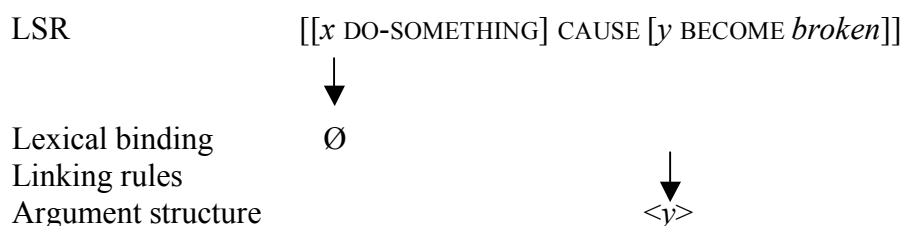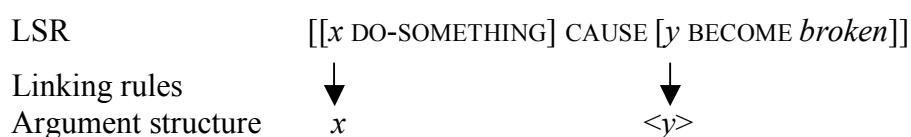
The condition for the verb to decausativize is that the verb must not impose any lexical specification on the causing subevent; in this way, when it is used intransitively, the external cause argument of the verb is understood as not being lexically specified. Therefore, the external argument can be left unexpressed. According to L&RH (1995), this is possible because the alternating verbs express only the resultant state, leaving the causing event unspecified: for example, in the sentence *Mark broke the door*, only the change of state of the door is specified, while the causing event remains unspecified; a lot of different activities could have caused the change of state. The decausativizing process is possible when the event can be conceived as occurring spontaneously.

L&RH's analysis (1995) seems to be confirmed by data of 'anticausativizing' languages (cf. 2.2), where the unaccusative form of the alternation is the marked one. However, as we have seen in 2.2, the morphology of the causative alternation varies greatly across languages and many languages prefer causativizing to anticausativizing

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[26] L&RH (1995:108) suggest that the binding of the external cause takes place in the mapping from the lexical semantic representation to the argument structure. The evidence that the binding of the external cause takes place before argument structure comes from comparison with passive verbs. Grimshaw (1990) shows that the operation that derives passive verbs involves binding a position in the lexical syntactic representation of a verb (argument structure), preventing the expression of that argument in the syntax.

morphology. As we have already mentioned, Haspelmath (1993) points out that languages that prefer anticausatives are spoken in Europe, while languages that prefer causatives are spoken elsewhere: he states that the absence of causative morphology and anticausative derivations seems to be an European areal feature.

According to Haspelmath (1993), the anticausative type is favoured by the probability of an outside force to bring about the event. In contrast, the causative type is favoured if the event is quite likely to happen without outside force: "The more typical the change of state is, the more likely the causative type will be unmarked" (cf. Haspelmath 1993:103). Verbs like *freezing*, *drying*, *sinking* and *melting* do not need an agentive instigator, thus they are more likely to appear in alternations when the causative variant is marked (causative type). In contrast, verbs like *splitting*, *breaking*, *closing*, *opening*, *gathering* express things that human beings do, therefore they are more likely to appear in alternations when the intransitive variant is marked (anticausative type). However, according to Haspelmath (1993:103) the correlation is only typical, not necessary: people may sink, dry, melt, freeze things; things may split, close, break spontaneously.

Haspelmath (1993) argues that if the semantic properties of a word are only the objective semantic features discovered by semantic decomposition, then causatives are always semantically more complex than inchoatives, thus the causative type follows the direction of the semantic derivation, and the existence of the anticausative type is odd. However, events that are more likely to occur spontaneously will be associated with a conceptual prototype of a spontaneous event, and this will be expressed in a structurally unmarked way. In contrast, events that are more likely to be brought about by an external agent will be associated with a stereotype of a caused event, so the caused event will be expressed in a structurally unmarked way (anticausative type) (cf. Haspelmath 1993:107). Nevertheless, Haspelmath stresses the fact that this form-meaning correlation is only a tendency.

Given the great cross-linguistic variation, with languages that prefer anticausativizing morphology vs. languages that prefer causativizing morphology, Ramchand (2008) argues that the morphological argument to show the direction of the derivation of alternating verbs is equivocal. According to Ramchand (2008), if we were to consider the morphological behaviour, we should assume that the derivation can potentially go in either direction.

Moreover, Ramchand (2008) revises L&RH's (1995) argument about selectional restrictions on arguments (cf. exx. 22 and 23). As we have seen, L&RH (1995) state that the fact that the set of possible internal arguments are looser in the intransitive version than in the transitive one speaks in favour of a derivation of transitive to intransitive: alternating verbs are basically causatives. However, Ramchand (2008) notices that in some cases the selectional restrictions are looser in the transitive version, as in the examples in (27), from Ramchand (2008:84), where the idiomatic interpretation is available only in the intransitive use of the verb *collapse*:

(27)   a. *The tent collapsed.*
        b. *Mary collapsed.*
        c. *Sue collapsed the tent.*
        e. **Sue collapsed Mary.*

Ramchand (2008) is not convinced that L&RH's (1995) argument on argument selection actually works, even if their generalization represents the dominant pattern. She argues that the assumption of the superiority of the transitive to intransitive derivation is due to a particular conception of the lexicon and of its role in expressing selectional restrictions.

Ramchand (2008) observes that in a lexicalist system, where verbal meaning is completely stored in the lexical item and any non-predictable meaning is stored in the lexicon together with the lexical item, idiosyncratic transitive versions cannot be explained by additive rules: adding semantic content cannot provide a simple predictive system, unless the added content is the same for every alternation. However, in a constructivist approach, idiom formation can be associated to larger structures: thus, it is possible to associate an idiomatic content to a transitive verb built up from an intransitive root via a causational head (cf. Ramchand 2008:84). Furthermore, Ramchand points out that in a constructivist approach the intransitive to transitive derivation does not have to be specified as a rule: the derivation is predicted as the outcome of structure building during the course of the derivation. According to Ramchand, under this view, transitivization is more regular and transparent than detransitivization. Ramchand's aim is not to provide arguments for the superiority of transitivization, but rather to deny the assumption that detransitivization is the only possible derivation.

Ramchand (2008) tries to demonstrate that in English transitivization is more economic than detransitivization. She considers transitive verbs specified for [init,

proc] features, like *melt* and *hammer*, and verbs specified for [init, proc, res] features, like *break* and *throw*. Some verbs in both classes have an intransitive variant, while some others do not: e.g. *melt* and *break* are alternating verbs, while *hammer* and *throw* are not (cf. exx. 28 and 29, from Ramchand 2008:85).

(28)   [INIT, PROC] VERBS
        a. *Karena melted the butter.*
        b. *The butter melted.*
        c. *Karena hammered the metal.*
        d. **The metal hammered.*

(29)   [INIT, PROC, RES] VERBS
        a. *Alex broke the stick.*
        b. *The stick broke.*
        c. *Ariel threw the ball.*
        d. **The ball threw.*

Looking at these verbs from a detransitivizing perspective, Ramchand (2008) points out that the derivation of these alternations could be possibly realized in two ways: either by conflation of the Initiator and the Undergoer roles or by a kind of role suppression, i.e. the Initiator role is completely missing[27]. In any case, it would be necessary to add to the lexical entries some specifications that clearly state that detransitivization is possible. Therefore, a verb like *break* [init, proc, res], besides its features, should specify that it is distinct from verbs like *throw* [init, proc, res], which have the same category features (and the *Aktionsarten* properties derived from them) and can undergo detransitivization.

In contrast, Ramchand (2008) assumes that causativization is more economic and provides a simpler system. She observes that intransitive verbs with an initiation component (where the same DP is both the Initiator and the Undergoer, i.e. represent a composite role) cannot causativize: e.g. **Michael ran Karena* (cf. Ramchand 2008:86). Therefore she assumes that English has a process of causativization, as a result of automatic structure building, which forms transitive verbs from verbs that do not contain a [init] specification and which is allowed for the presence of a default null *init* head. Alternating verbs like *melt* and *break*, thus, are listed as [proc] and [proc, res], respectively, rather than as [init, proc] and [init, proc, res] (cf. exx. 28 and

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[27] In Ramchand's system, the mechanism of argument identification can be equated to the creation of composite roles (each specifier position does not need to be filled with a distinct DP). Moreover, argument suppression can be equated to the possibility of non-projecting category features of the root (cf. Ramchand 2008:85).

29). The transitive version would then be built by introducing a layer on top of their structure due to the null *init* head, which has the semantics of general causation[28]. The representation of alternating verbs like *melt* and *break* would be as illustrated in (30), representing (28a) and (28b), and (31), representing (29a) and (29b) (cf. Ramchand 2008:86-87):

(30)   a. Intransitive *melt* [proc]
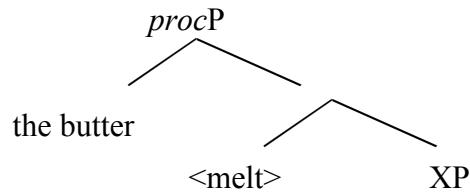
b. Transitive *melt*

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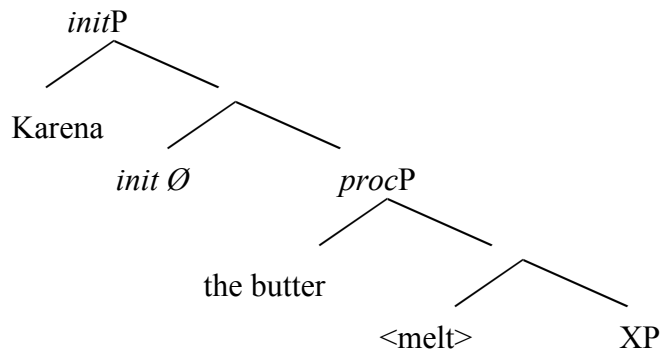
[28] Hale & Keyser (1998) too assume a derivation from intransitive to transitive for English verbs through structure building. According to Hale & Keyser, unergative verbs cannot transitivize (e.g. **laugh the child*) because the structural type of their lexical argument structure (monadic type) lacks a specifier (cf. chapter 1, fn.61), and thus there is no place in the lexical structure for the surface object of an hypothetical transitive clause (cf. Hale & Keyser 2002:15). In contrast, unaccusative verbs are characterized by a dyadic type configuration and have a specifier (cf. fn.21). These verbs may have a transitive counterpart, which is derived by insertion into the complement position of a verbal structure (ii).
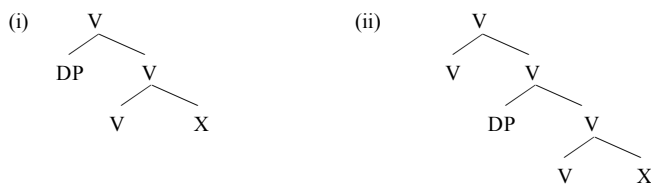
As far as the derivation of the alternation is concerned, Hale & Keyser (1998) suppose that in English, where the transitivity alternation is not itself associated with any overt morphology, alternating verbs have the simplest structure and, consequently, the simplest derivation, i.e. the intransitive one (i). Therefore, they assume that, in the absence of overt morphology, the direction is always from the simpler structure (intransitive or inchoative) to the more complex (transitive). For evidence in favour of this hypothesis, see Hale & Keyser (1998).

(31)   a. Intransitive *break* [proc, res]

```
                        procP
                       /    \
              the stick      \
                            / \
                        break   resP
                               /   \
                        <the stick> \
                                   /  \
                               <break>  XP
```

b. Transitive *break*

```
         initP
        /    \
   Karena     \
             / \
        init Ø   procP
                /    \
         the stick    \
                      / \
                  break   resP
                         /   \
                  <the stick> \
                             /  \
                         <break>  XP
```
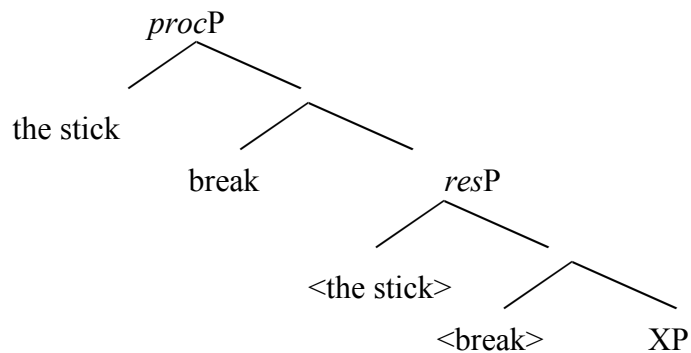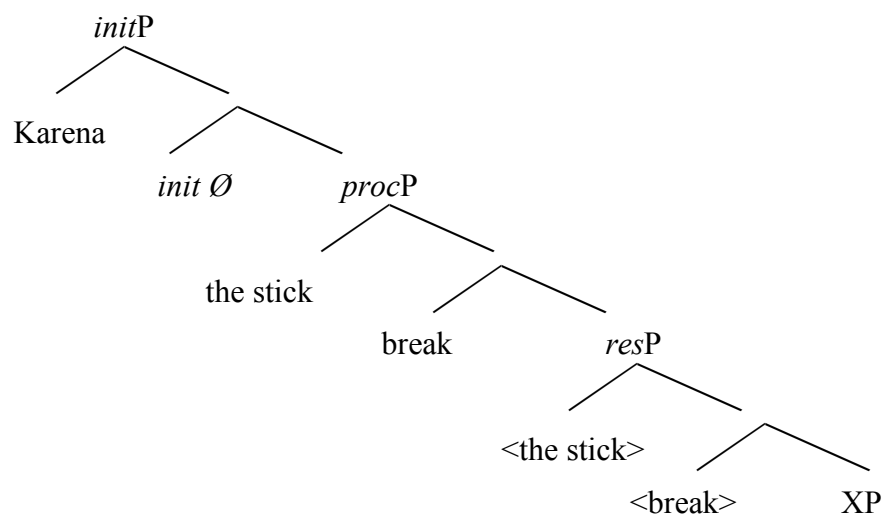
This approach gives the advantage not to require other specifications for the lexical entries other than the category features already assumed in the system, since alternating verbs are just those, like *melt* or *break*, that do not have an [init] feature in their lexical entry and are able to causativize, owing to the presence in English of a null lexical item (i.e. the null causative *init* head). Actually, the null *init* head would correspond to the presence of explicit causative affixes in other languages (cf. 2.2), which fill the *init* head, building an extra layer on top of intransitive verb roots with [proc] or [proc, res] features[29].

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[29] Ramchand (2008) recognize that the postulation of a null causative head is a disadvantage of this analysis, even though its presence would reasonably salient to the learner given the robustesness of the alternation in English. An alternative to this analysis would be to assume that some verbs have only optionally an [init] feature, e.g. *break* [(init), proc, res]. However, Ramchand aims at restricting such optionality to certain semantically well understood subcases (cf. the case of semelfactives). Reduction rules in the lexicon are not allowed in this system and alternations based on structure building are the most natural in a constructivist approach. Moreover, according to Ramchand, structure building through a null causative head would be the simplest way to capture the distributional restrictions on the process.

Apparently, the presence of a null *init* head can help explain the looser selectional restrictions of the subject position of alternating verbs (cf. Hale & Keyser 2002): actually, alternating verbs seem to admit a wider range of causes in the subject position than non-alternating verbs (cf. Ramchand 2008:88). According to Ramchand, this could be explained under the null *init* head analysis, since non-alternating verbs are specified for an [init] feature and will impose specific lexical encyclopedic requirements on their initiators, while alternating verbs, in their transitive version, have a null head filling the *init* projection head, thus the requirements are more abstract, constrained only by general causational semantics.

2.5 Concluding remarks

In this chapter we tried to provide an overview on causativity from a cross-linguistic and formal point of view. We have first explored the different ways in which languages can express causativity: synthetically, lexically or analytically. Different languages can express causativity in different ways, depending on what alternatives they are offered by their lexical inventory.

We have also addressed the issue of direct and indirect causation and we have shown how, even though apparently there is a tendency to express direct causation with more lexical (or compact), less productive forms, and indirect causation with less compact and more productive periphrastic forms, the correlation is not perfect and depends also upon language-specific characteristics (cf. Dixon 2000, Shibathani & Pardeshi 2001). Also, as highlighted by McCawley (1998 [1970]), the possible interpretations of a particular construction may depend on the alternatives available in a language to express certain types of events.

Finally, in this chapter we have addressed the issue of the derivation of causatives. L&RH (1995), Reinhart (2002), Chierchia (2004 [1989]) agree in deriving the inchoative-causative alternation from a fundamentally transitive frame.

Ramchand (2008) argues that the morphological argument to show the direction of the derivation of alternating verbs is equivocal, since languages can choose either causativizing or anticausitivizing morphology (cf. Haspelmath 1993): if we were to see the problem from the morphological point of view, we should assume that the derivation can potentially go in either direction. Ramchand tries to show that in English transitivization is more regular and transparent than detransitivization.

In chapter 4 we show that the transitivization analysis apparently also holds for Mandarin Chinese (a very analytic language, with a poor morphology but a high productivity of compounding), where causativity, besides resultatives and periphrastic constructions, can be expressed by adding a light (or dummy) verb to the verbal root, which would occupy the place of the null *init* head in English. While direct causation is primarily expressed by resultative compounds (chapter 5 and 6), which are very productive in the language (cf. Chen J. 2008), and by means of complex verbs formed with a light verb (chapter 4), indirect causation is primarily expressed by periphrastic constructions, but in some cases by compounding as well (chapter 6). Therefore, Mandarin Chinese mainly expresses causativity analytically.

In contrast, in Old and Middle Chinese the causative meaning was generally expressed by labile verbs or by morphological alternations, i.e. synthetic causatives (cf. Lien 1999, Shi 2002, Xu 2006, among others), as well as by syntactic causative constructions, even though syntactic strategies were much rarer than morphological ones (cf. Xu 2006).

In Modern Chinese there are just a few relics left of these causative strategies, which are no longer productive, and analytic means are the only way to express causative situations. This change in the language highlights a typological shift of Chinese from a synthetic to an analytic language, which seems to pair the change from monosyllabism to polysyllabism (more precisely, disyllabism; e.g. Wang 1980 [1957-1958], Cheng 1981, Li & Thompson 1981, Norman 1988, Baxter & Sagart 1998, Packard 2000).

Before proposing an analysis of causative verbs in Mandarin Chinese, in the next chapter we will illustrate the development of causatives from Old Chinese to Middle and Modern Chinese, highlighting the great typological shift that took place in the Chinese language.

3. Causatives: From Old to Modern Chinese

3.1 Introduction

It has been observed that Chinese underwent an important typological shift from a synthetic language (similar to the Tibetan language) to an analytic language (cf. Mei 1991, Xu 2006 among others), a shift that seems to pair the passage from monosyllabism to polysyllabism (more precisely, disyllabism), as we have seen in chapter 1. Therefore, Old Chinese apparently was not an analytical language as it has usually been claimed. As highlighted by Baxter & Sagart (1998:67), the widespread belief that Old Chinese consisted of monosyllables without any grammatical marking probably comes from the fact that classical texts are read with the modern pronunciation nowadays, and thus most of the original phonological distinctions have been lost; as a result, many characters, which originally had more than one pronunciation, have now only one reading. Moreover, even at the time they were written, the early texts gave only incomplete information about pronunciation; different pronunciations were inferred from the semantic and syntactic contexts. The typological change is clear if we observe the evolution in the way in which causativity is expressed from Old to Modern Chinese.

In this chapter we provide an overview on the evolution of causativity in Chinese. This diachronic overview will help us gain a better understanding of causatives in contemporary Mandarin Chinese and to understand their origin. In particular, the loss of particular causative strategies led to the development of analytic means to express causativity. We first briefly address the issue of morphological phenomena in Old Chinese and then focus on the different means to express causativity in Old Chinese: phonological and morphological causatives, lexical causatives, syntactic causatives. We also propose an analysis of the derivation of causative alternations for morphological and lexical causatives.

After the loss of affixes, Chinese started to develop other causative means. We show causatives formed by tone or voicing contrast in Middle Chinese, which eventually disappeared, leaving Chinese only with syntactic means to express causativity. We also deal with the issue of the development of the resultative construction and, in particular, of resultative compounds, an alternative analytic

means to form causatives, the development of which is apparently strictly connected to the disappearance of voicing alternations.

3.2 Affixation in Old Chinese

According to the reconstructions[1], Old Chinese made use of different kind of affixes (Maspero 1930 was the first who identified prefixes in Old Chinese)[2]. There is an *N- prefix reconstructed in Old Chinese (cf. Baxter & Sagart 1998), which apparently caused a following voiceless obstruent to become voiced in Middle Chinese (but see also 4.1 below), as in the example in (1) from Baxter & Sagart (1998:46):

(1)   a. 見 *jean < kenH <*kens* 'to see'
      b. 見, 現 *xiàn < henH < *N-kens* 'to appear'

The suffix *-s* is another example of Old Chinese affix, which was usually attached to adjectives or verbs to form nouns (cf. Li 1980, Baxter & Sagart 1999, Xu 2006), as in the example in (2) from Baxter & Sagart (1998:55):

(2)   a. 数 *shǔ < srjuX < *s(C)rjoʔ* 'to count'
      b. 数 *shù < srjuH < *s(C)rjoʔ-s* 'number'

Apparently the suffix *-s* could also be attached to gradable adjectives to form nouns, in a way very similar to the suffix *–th* in English (e.g. *warm→warmth*), as in the example in (3), from Baxter & Sagart (1998:55):

(3)   a. 高 *gāo < kaw <*kaw* < 'high, tall'
      b. 高 MC (Middle Chinese) *< kawH <*kaw-s* 'height'

Moreover, it has been pointed out that in some cases, the suffix *-s* conveyed causative meaning, as shown in the example in (4), from Xu (2006:117) where a noun becomes a causative verb by adding the suffix *-s* (for other affixes with causative function, see the next section):

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[1] It should be noted that, although the Chinese writing system gives little information about the pronunciation, there is a rich commentarial and lexicographical tradition which gives great insights into the existence of word formation processes (cf. Baxter & Sagart 1998:42-43).

[2] Karlgren (1933) also states that Proto-Chinese must have had formal word classes and regular systems of inflection and word derivation. However, it is unable to find clear-cut association between phonetic alternation in Old Chinese (as he reconstructs it) and semantic/grammatical functions, stating that at the time of earliest texts, the derivational processes had been obscured by phonetic change (cf. Pulleyblank 2004:1731).

(4) a. 王 *waŋ > hjwang > wáng 'king'
     b. 王 *waŋs > hjwangH > wàng 'to make somebody king'

Another example is the infix *-r- (cf. Pulleyblank 1973, Sagart 1993, Baxter & Sagart 1998), which probably was the only infix in Old Chinese. As pointed out by Sagart (1993), it is difficult to be sure about the exact function of the infix *-r- in Old Chinese: it can mark plural or collective forms (nouns); it can express iterative, durative meaning (action verbs); it can express intensive meaning (stative verbs or adjectives); according to Pulleyblank (1973), it can also express causativity (cf. examples 12 and 13 in the next section)[3].

According to Mei (1991), morphological and phonological processes gradually fell into disuse and were completely lost during the Tang period (618-907 AD).

In Old Chinese, causativity was generally expressed by morphological and lexical means and, in some cases, by syntactic structures as well (cf. Xu 2006), as we will see in the next section.

3.3 Causativity in Old Chinese

3.3.1 Morphological causatives

As we have already stated, Old Chinese apparently made use of morphological means to form causatives. In this section, we will illustrate a few examples of such morphological devices.

According to most accounts, the prefix *s- in Old Chinese had causative, denominative, directive and intensive[4] functions (cf. Mei 1989, Baxter & Sagart 1998, Sagart 1999, Xu 2006, Schuessler 2007). In the examples (5)-(9), the causative function of the prefix *s- is highlighted[5]:

(5) a. 吏 *(C-) rjɨ(ʔ)-s > liH > lì 'clerk, minor officer'
     b. 使 *s- (C-) rjɨʔ > shǐ > sriX '(cause to be an emissary:) send, cause'
     From Baxter & Sagart (1998: 53)[6]

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[3] For other kinds of affixes in Old Chinese, cf. also Pulleyblank (2004).

[4] It has been proposed that causativity and intensive/iterative are two aspects of one morpheme, but for practical purposes the two functions are taken apart in Chinese (cf. Schuessler 2007:19).

[5] The examples seem to show that the suffix *s- could attach to different types of verbal roots. Note that, according to Pinker (1989), only languages with causative morphemes allow unergative verbs to undergo a productive lexical process of causativization.

[6] In Baxter-Sagart Old Chinese reconstructions, the reconstruction is as follows: 吏 *[r]əʔ-s → 使 *s-rəʔ. The consonant (C-) is supposed to be r. The prefixed verb 使 *s-rəʔ > shǐ later became a causative verb and was used in the periphrastic causatives (cf. 3.3.3).

(6) a. 食 * *m-lək > zyik > shí* 'to eat'
  b. 食 * *s-m-lək-s > ziH > sì* 'to feed'
  From *Baxter-Sagart Old Chinese reconstructions* [7]:
  http://sitemaker.umich.edu/wbaxter/old_chinese_reconstructions

(7) a. 敗 **brads > bway > bài* 'ruined, become defeated'
  b. 敗 *(s-brads >) *prads > pway > bài* 'ruined, become defeated'
  Examples adapted from Mei (2009)

(8) a. 悟 (寤) **ŋâh > ŋa^C > wù* 'to awake'
  b. 蘇 **sŋa > sa > sū* 'to revive'
  (From Schuessler 2007:52)

(9) a. 視 **gijʔ-s > dzyijH > shì* 'look, see'
  b. 示 **s-gijʔ-s > zyijH > shì* 'show'
  From *Baxter-Sagart Old Chinese reconstructions*:
  http://sitemaker.umich.edu/wbaxter/old_chinese_reconstructions

Interestingly, the adding of an **s-* prefix is apparently the oldest way of forming causative verbs in the Tibeto-Burman family (cf. Matisoff 2003) and, although this morph has disappeared, relics of its presence are visible in some Lahu verbs with causative meanings that differ only in tone and/or initial consonant from the corresponding non-causative verbs. Also, in Burmese the **s-* prefix has given rise to aspiration of the following consonant (cf. Benedict 1972). Some scholars (cf. Chang 1971, Chang & Chang 1976 and Dai 2001) have shown that the **s-* prefix has devoicing effects upon the following consonant, for example obstruents and sonorants (e.g. *s-b > s-p > p*), and that **s-* prefix, due to this devoicing effect, has given rise to the voicing alternation in several Tibeto-Burman languages (cf. Mei 2009), as in the examples in (10), from Mei (2009), and in (11), from Shibatani & Pardeshi (2001:157):

(10) a. Lolo (also known as *Yi* in China: Burman-Lolo branch of Tibeto-Burman):
   ge 33 'to break by itself' / *khe 33* 'to cause to break'
  b. Hayu (a Kiranti language in Nepal):
   bek 'to enter' / *phek* 'to bring, to take in' (cf. Michailovsky 2003:523)

---

[7] Verbs with the prefix *m-* express controlled action by a volitional agent (cf. Sagart 1999:82). Some *m-* and *s-* verbs are formed only with some pair of verbs and this opposition is found in Tibetan: the *m-* verbs express the action of the subject of a sentence ('autonomous verbs'), in which the action is subject to be determined or changed by the will of the agent, or at least subjectively felt to be determined by him, while the *s-* verbs express the action of the object of a sentence ('causative verbs'); see Xu (2006). The distinction is also characterized as introvert verbs vs. causative/extrovert verbs (cf. Matisoff 1992, Schuessler 2007).

c. Tangut (a northeastern Tibeto-Burman language):
   bja 2 'end, cut off (intr.) / *phja 1* 'cut off (tr.)' (cf. Gong 2003:605)

(11) a. Cantonese:
   kwo? 'wide' / *kwok* 'widen (tr.)'
   b. Burmese:
   pyei' 'full' / *hpyei* 'fill'
   c. Tiddim Chin (Kuki-Chin-Naga subgroup of the Tibeto-Burman family):
   pú?k 'fall'
   pʰú?k 'fell'; *kìa* 'fall'

According to Mei (2009), the voicing alternation in Chinese (cf. 3.4.1) is a reflex of the *s-* prefix (cf. also Gong 2002).

Pulleyblank (1973) recognizes the causative function of the infix *-r-*[8]; however, Sagart (1993) points out that it could be the case that it is the forcefulness of the action that characterizes the *-r-* infixed forms. In (12) and (13) two examples of verbs infixed with *-r-* are presented (from Baxter & Sagart 1998:62):

(12) a. 至 *zhì* < *tsyijH* < **tjit-s* 'arrive'
   b. 致 *zhì* < *trijH* < **t-r-jit-s* 'bring'

(13) a. 出 *chū* < *tsyhwit* < **thjut* 'come out, go out, go away'
   b. 黜 *chù* < *trhwit* < **th-r-jut* 'expel

Xu (2006:115) points out that the difference between 至 *zhì* and 致 *zhì* has been neutralized during the Western Han period (206-23 B.C.); the two characters were confused in transmitted documents. The morphological causative had fallen into disuse in Old Chinese and the lexical causative began to decline during the Han period; the causative use of 致 *zhì* disappeared and was confused with 至 *zhì* 'arrive', which in Mandarin Chinese has just the intransitive use.

One interesting alternation was noticed long time ago (cf. Karlgren 1933), namely the alternation between forms with or without *-j-*, (cf. Baxter & Sagart 1998, Xu 2006), also known as "yod", as in the examples in (14) and (15), from Xu (2006:116):

(14) a. 入 **n-j-up > nyip > rù* 'to enter' (*-j-*)
   b. 内 **nup > nop > nà* 'to send in' (*-∅-*)

(15) a. 若 **n-j-ak > nyak > ruò* 'thus, like this' (*-j-*)
   b. 諾 **nak > nak > nuò* 'to agree' (*-∅-*)

---

[8] **r-* is a prefix in Tibetan, with parallels in Kachin, Bodo-Garo and Mikir (cf. Benedict 1972).

As for most the examples in this section, the forms in (b) are graphically derived by adding an element to the character in (a). However, differently from the other examples, where the derived (more complex) forms were the causative ones, the examples in (14) and (15) apparently show that in the case of the alternation *-∅- / *-j-, the unmarked form, i.e. the one without *-j-, is the causative one. Xu (2006) suggests that the examples in (14b) and (15b) can be retranslated as 'to make enter' and 'to make similar'. Therefore, as far as the alternation *-∅- / *-j- is concerned, the causative form is the simplex one, i.e. the unmarked one, which seems to be quite strange if we were to consider the other kinds of affixation in Old Chinese, as well as the way in which causativity is generally expressed in other Tibeto-Burman languages, where the causative form is always the more "complex" one (cf. Xu 2006)[9].

Except for the case of the *-∅- / *-j- alternation, it seems that the morphological way to create causative forms in Old Chinese was a complex derived word formed by means of affixation. Adopting Ramchand's (2008) framework, it seems that in Old Chinese an affix filled the *init* projection in the event structure (cf. 2.4.2), forming a derived causative verb. The presence of explicit causative affixes seems to support the causativizing analysis proposed in Ramchand (2008), as we have illustrated in the previous chapter (cf. 2.4.2). We do not aim at providing an analysis of the causativizing processes in Old Chinese but we just want to provide an overview of the evolution in the expression of causativity from Old to Modern Chinese, comparing the ways of forming causative verbs in different stages of the language. For this reason, we will give here just one example of the possible derivation of the causative formation in Old Chinese (cf. 16 representing 9b, repeated below):

(16)   a. 視 *gijʔ-s > dzyijH > shì 'look, see'   (cf. ex. 9)
       b. 示 *s-gijʔ-s > zyijH > shì 'show'

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[9] For example, it has been noted (cf. Xu 2006) that a particular phenomenon of Lepcha (a language belonging to the Tibeto-Burman family), i.e. the disappearance of the old *s- prefix after palatalizing the root initial, can help understand the origins of *-j- in Old Chinese, see for example: *nak* 'be straight' vs. *nyak* 'make straight' (cf. Xu 2006:116).

initP
                DP₁
                        s-   procP
                                DP₂
                                        *gijʔ-s 'look' [init]   XP
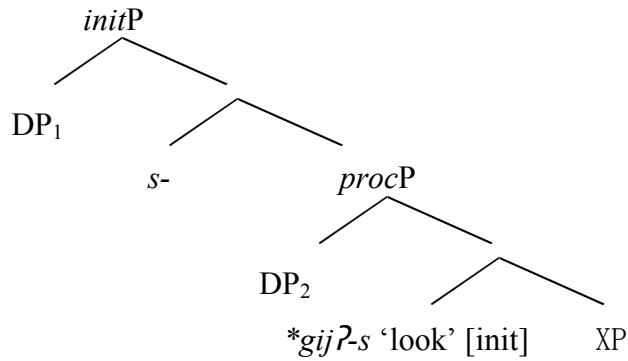
As already stated (cf. 3.2), affixes were lost in Middle Chinese and some of them gave rise to tones; Chinese became a tonal language and tonal alternation, together with the voiced/voiceless alternation, was the only synthetic means to indicate causativity, as we will see in 3.4.1.

3.3.2 Denominal, deadjectival and labile verbs

Apparently, Old Chinese had lexical causatives as well; as in the case of morphological causatives, this kind of causatives too disappeared in Middle Chinese, around the fifth century A.D. (cf. Xu 2006). In Old Chinese, nouns, adjectives and intransitive verbs could be generally used as transitive causative verbs (cf. Shi 2002, Huang 2005, Xu 2006, among others).

Some examples of roots that in normal context were nouns, but that could be used as verbs, are presented in (17) below[10].

(17) a. 樹 *shù* 'tree' → 'plant a tree'
      五   畝   之   宅,   樹   之   以   桑 […]
      wǔ   mǔ   zhī   zhái,   shù   zhī   yǐ   sāng
      five land measure PART residence   plant it   with mulberry tree
      'Let the mulberry be planted in every homestead of five mus of land […]'
      (孟子 'Mencius', 梁惠王上 'Liang Hui Wang' I 3.4. From *Chinese Text project*, our translation)
      b. 友 *yǒu* 'friend' → 'make friends (befriend someone)'
      友   也   者,   友   其   德   也 […]
      yǒu   yě   zhě   yǒu   qí   dé   yě
      befriend PART TOP   befriend his virtue PART
      'In making friends with someone you do so because of virtue […]'
      (孟子 'Mencius' 5A/2, from Xu 2006:118)

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[10] Hereafter, for all the examples in Old or Middle Chinese, we will indicate the modern pronunciation and write the examples in traditional characters.

c. 衣 *yī* 'cloth' → 'clothe'

[...]五十	者	可	以	衣	帛	矣
wǔshí	*zhě*	*kě*	*yǐ*	*yī*	*bó*	*yǐ*
fifty	one who	can	with	clothe	silk	PART

'[…] and persons of fifty years may be clothed with silk.'
(孟子 'Mencius', 梁惠王上 'Liang Hui Wang' I 3.4. From *Chinese Text project*)

It can be assumed that these denominal verbs in Old Chinese were formed by a process of conflation (cf. Hale & Keyser 1993, Ramchand 2008), where the denominal verb is built from the incorporation of rhematic material into the projection head, as in (18):

(18)
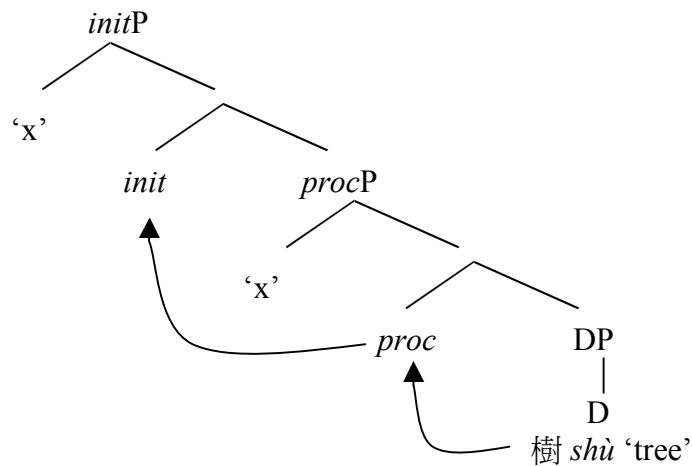
However, apparently these items could be used as transitive verbs, thus taking an object, in a way similar to English verbs like *dance*, e.g. *dancing a jig*. For this reason, following Ramchand's (2008) proposal related to denominal verbs in English, we can assume that in Old Chinese these lexical items had both verbal and nominal features[11], in the same way as English verbs do, i.e. 樹 *shù* 'tree' [*init, proc,* N]. Being specified also for verbal features, this lexical item could independently fill the *init* and *proc* projection heads in the structure. The nominal feature of 樹 *shù* can underassociate and an independent DP structure can be merged in the complement position (the underassociated N feature on 樹 *shù* is shown in brackets). The example

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[11] As we have seen (cf. 1.4 and chapter 1, fn. 49), Ramchand (2008) assumes a 'superset principle' (cf. Starke 2009), according to which a lexical item may be inserted to spell out a sequence of heads if its category signature is a superset of the sequence to be spelled out (remember that in this system a lexical item spells out chunks of trees). Ramchand calls 'underassociation' the use of a lexical item that bears a superset of the category features it actually spells out in the structure (cf. chapter 1). However, underassociation is subject to specific conditions, thus imposing constraints on the superset principle.

(19a) shows a sentence where 樹 *shù* is a transitive verb (thus taking an object); in (19b) we give its (simplified) structure:

(19) a. 荏   染   柔   木，   君子   樹   之。
       rěn   *răn*   *róu*   *mù*   *jūnzǐ*   *shù*   *zhī*
       soft   dye   soft   tree   gentleman   tree   it / them
       'Trees of soft wood, easily wrought, men of noble character plant them.'
       (詩經 'Book of Poetry', 小雅 'Minor odes of the kingdom', 小旻之什
       'Decade Of Xiao Min', 巧言 Xiao Yan, from *Chinese Text project*)

       b.
           (荏染柔木 *rěn răn róu mù* 'trees of soft wood')
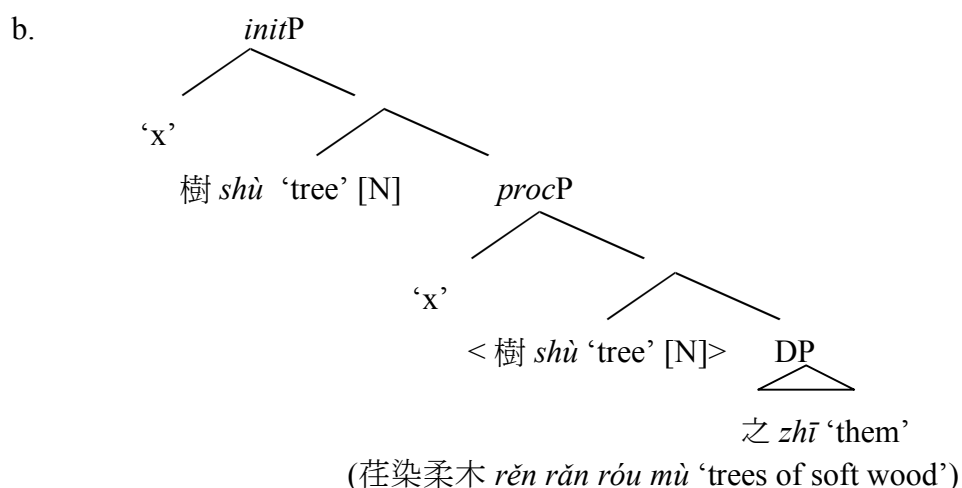
In Old Chinese adjectives could usually act as causative verbs, e.g. 'X 大 *dà* Y' means 'X makes Y big' (cf. Pulleyblank 1995, Xu 2006). See the examples in (20):

(20) a. 匠   人   斲   而   小   之   [...]
       jiàng   *rén*   *zhuó*   *ér*   *xiǎo*   *zhī*
       craftsman   person   cut   CONJ   small   it /them
       'If the craftsmen cut and made them small [...]'
       (孟子 'Mencius', 梁惠王下 *Liang Hui Wang* II, from *Chinese texts project*,
       our translation)

       b. 王   請   大   之！
       wáng   *qǐng*   *dà*   *zhī*
       king   please   big   it
       'I beg your Majesty to make it great'
       (孟子 'Mencius' 1B/3, adapted from Pulleyblank 1995:25 and Xu 2006:119)

As we will see in chapter 4 for Modern Chinese, it is not the case that in Chinese all adjectives are a particular subset of verbs or that Chinese lacks adjectives all along. We assume that the adjectival class existed in Old Chinese, just as in Mandarin

Chinese, but also that, apparently, a set of predicative adjectives[12] (stage level adjectives) could be used as eventive predicates. It can be assumed that these items had both adjectival and verbal features (as in the case of denominal verbs seen above), or else it can be supposed that some adjectives in Old Chinese could undergo a process of conflation (cf. Hale & Keyser 1993, Ramchand 2008 and chapter 4), which turned them into verbs. The conflation process is represented in (21); following Ramchand (2008), it consists of the incorporation of rhematic material from the complement position of the *proc* projection:

(21)　　大 *dà* 'make big, enlarge'
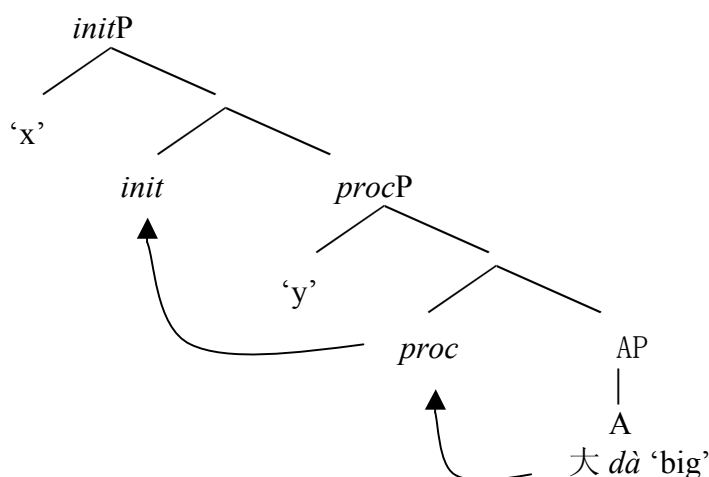
We will discuss this issue further in chapter 4, when dealing with the topic of the adjectives that can be used as intransitive change of state verbs in Mandarin Chinese; the only difference with Old Chinese would be that these items in Modern Mandarin Chinese cannot be used transitively, unless another verbal root is added.

Finally, some intransitive verbs can be used causatively (cf. Pulleyblank 1995, Xu 2006). Yakhontov (1986) points out that motion verbs like 走 'leave, run away' were often used as causatives in Old Chinese. Some authors cite examples like 來 *lái* 'arrive' 生 *shēng* 'give life to', 走 *zǒu* 'leave', 行 *xíng* 'go, proceed, put into motion, operate, carry out', 起 *qǐ* 'rise up, raise, start', 作 *zuò* 'arise, appear; cause to arise, create, make' as instances of lexical causatives. In (22) we give a couple of examples of the transitive use of these verbs (examples are from Xu 2006:119-120).

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[12] For the contrast between predicative and non-predicative adjectives, cf. chapter 4.

(22) a. 秦　　　戰　　勝　　魏，走　　　孟　　卯
     qín　　*zhàn*　*shèng*　*wèi*　*zǒu*　　*Mèng*　*Mǎo*
     Qin　　attack　win　　Wei　leave　Meng　Mao
     'The state of Qin attacked and beat Wei, making Meng Mao run away'
     (戰國縱橫家書 'Letters of Strategists in the Warring State period', 15)

    b. 主君　　　何　　為　　亡　　邯鄲　以　　敝　　魏　　氏…
     zhǔjūn　　*hé*　　*wéi*　*wáng*　*Hándān* *yǐ*　*bì*　　*Wèi*　*shì*
     Majesty　　what　reason die　Handan for　hurt　Wei　clan
     "Why does His Majesty want to sacrifice Handan in order to hurt the State of Wei…"
     (戰國縱橫家書 'Letters of Strategists in the Warring State period', 27)

Most of these verbs seem to be labile verbs. Therefore, Old Chinese seems to display causativization processes similar to the ones represented in English by labile verbs (e.g. *break*, cf. 2.4.2). We can assume that, like English, Old Chinese too had a null *init* head and made use of a causativization process, consisting in the addition of this null causative head, which filled the *init* projection, building an extra layer on top of the intransitive verb structure, as shown in (23):

(23)

*init*P
DP₂
∅　　*proc*P
DP₁
走 *zǒu* 'leave'　　XP
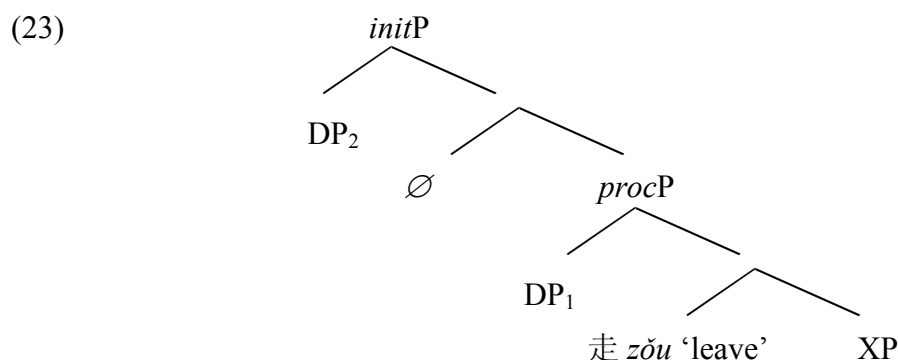
In some cases, transitive verbs could be causativized as well (cf. Pan 1982, Liu 1994, Lien 2003a), as in the example in (24), adapted from Pan (1982:221-225), where the transitive verb 啖 *dàn* 'eat' is used in the sense of 'cause to eat/feed' (English translation given by Lien 2003a:4)[13]:

(24) 嘗　　啖　　我　　以　　遺　　　桃
     cháng *dàn*　*wǒ*　*yǐ*　*yí*　　*táo*
     once　eat　I　　with　remnant　peach
     '[...] have caused me to eat (treated me to) the peaches that remain'.

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[13] This could be due to the fact that the verb 啖 *dàn* 'eat' could be conceived as being an externally caused verb, and thus the sentence in (24) would mean 'feed me peaches' rather than 'cause me to eat peaches', directly affecting the object. Interestingly, Ramchand (2008:161) observes that in Hindi/Hurdu the verb 'eat' can take the *-aa* suffix, which expresses direct causation (cf. chapter 6, fn.68).

In this case, we assume that the null *init* head fills the *init* projection head, leaving the [init] feature of the verb 啖 *dàn* 'eat' [init, proc] unassociated: the verbal root identifies only the *proc* projection head (25)[14].

(25)

```
                    initP
                   /    \
               DP_2      \
                    /        \
                   ∅          procP
                              /    \
                          DP_1      \
                              /        \
                    啖 dàn 'eat' [init]   XP
```
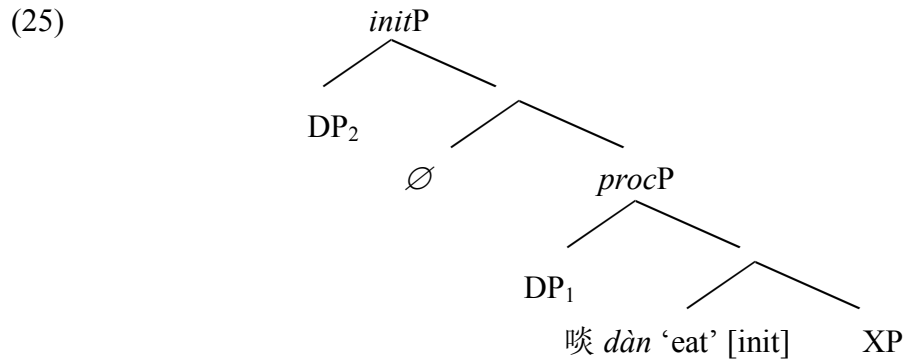
An examination of all the possible kinds of verbs which undergo causativization in Old Chinese is beyond the scope of this dissertation. However, the examples given above will help to show that Old Chinese causatives clearly contrast with the Modern Chinese ones, as we will see in the following chapters. Modern Chinese has no morphological causatives and just a few lexical causatives (e.g. 开 *kāi* 'open', 沉 *chén* 'sink', cf. chapter 4); the null *init* head in Chinese is replaced by a verbal root, forming analytic causatives.

3.3.3 Syntactic causatives

In this section we take a brief look at syntactic causatives. In Old Chinese syntactic causatives were built by means of the markers 使 *shǐ*, whose core meaning is 'to use' (only occasionally meaning 'to order', 'to ask someone to do something', cf. Xu 2006:124-125) and 令 *lìng*, whose core meaning is 'to order'; the meanings of these roots were eventually neutralized and they were reanalysed as causative markers (cf. Xu 2006).[15]

The syntactic causative construction had the form 'NP_1 + 使 *shǐ* / 令 *lìng* + (NP_2) + V_2'. Examples of 使 *shǐ* and 令 *lìng* in the causative construction are found in one of the earliest classics, i.e. the 詩經 *Shī Jīng* 'Book of Odes', a collections of poems

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[14] According to Lien (2003), all the Old Chinese lexical causative just illustrated involve a hidden causative verb that has been lexically incorporated into the main verb (cf. Hale & Keyser 1993).

[15] As we have already seen (cf. ex. 5), the causative marker 使 *shǐ* was already a causative verb affixed with the causative suffix *-s*.

from the 10th to the 5th century B.C. (cf. Chappell & Peyraube 2006). According to Chappell & Peyraube (2006:977), these causative verbs continued to be used in the Pre-Medieval period (2nd century B.C. – 2nd A.D.) throughout the Medieval (2nd – 13th A.D.), Pre-Modern (13th –14th A.D.) and the Modern periods (15th–18th A.D.), up until the 18th century, although only in the register of Classical Chinese. An example of a syntactic causative with 使 *shǐ* is given in (26) (from Chappell & Peyraube 2006:977):

(26)　使　　周　　游　　於　　四　　方
　　　shǐ　*zhōu*　*yóu*　*yú*　*sì*　*fāng*
　　　CAUS　around　travel　at　four　direction
　　　'making (them) travel around in all directions'
　　　(國語 'Guoyu', 齊語 'Discourses of Qi')

As we have already pointed out, morphological causatives were the first to decline and lexical causatives progressively disappeared by the time of Middle Chinese. During the transition period (approximately coinciding with the Han period, 206 B.C. -220 A.D.), lexical and syntactic causatives co-occurred in texts, but eventually only the syntactic causative survived. See the examples in (27), from Xu (2006:122), where 怒 *nù* 'rage' is used as a lexical causative (27a), i.e. 怒 *nù*+NP, and as a syntactic causative in (27b), i.e. 使 *shǐ* +NP+怒 *nù*, 'to make someone furious'.

(27)　a. 若　為　小　而　祟，　以　　怒　　　大　　國 [...]
　　　　　ruò　*wéi*　*xiǎo*　*ér*　*suì*　*yǐ*　*nù*　　*dà*　*guó*
　　　　　if　be　small　and　secretively　thereby　become.angry　big　state
　　　　　'If a small state acts secretively and enrages a big state [...]"
　　　　　(國語 'Guoyu', 魯語上 'Discourses of Lu' 1)
　　　b. [...]使　　君　　　　盛　　怒
　　　　　shǐ　*jūn*　　　*shèng*　*nù*
　　　　　make　Your-majesty　greatly　rage
　　　　　'(our ruler) makes your Majesty boil with rage'
　　　　　(國語 'Guoyu', 魯語上 'Discourses of Lu' 1)

As it can be observed from the available texts, the two causative markers have slightly different functions: when 令 *lìng* is used, the following verb is usually concrete, since the verb 令 *lìng* 'to command', from which the causative marker is re-analysed, requires a [+human] NP; when 使 *shǐ* is used, the following verb can be

either concrete or abstract, since the verb 使 *shǐ* does not require a [+human] NP (cf. Xu 2006:127-128).

As highlighted by Xu (2006), there are other elements which make evident the fact that the meaning of 令 *lǐng* is stronger than that of 使 *shǐ*; she cites the investigation on some pre-Qin texts by Yue-Hashimoto (1999), where the sentences with 令 *lìng* seem to express an imperative meaning, while those with 使 *shǐ* indicate a non-imperative meaning, proving that 令 *lìng* better retained its core meaning, i.e. 'to order'. Xu (2006:128) suggests that these semantic features later determined the differentiation of these two verbs: when 令 *lìng* 'to order' is used, the following verb usually expresses a volitional action; when 使 *shǐ* is used, the following verb do not necessarily express a volitional action. This could be the reason why 令 *lìng* 'to order' in most documents retained its verbal status and why in Mandarin Chinese only 使 *shǐ* retains its function as a causative marker.

Lien (2003a) shows another kind of syntactic causative, i.e. the pivotal construction 以 *yǐ*...為 *wéi* 'take...as'. According to Lien, the construction X- 以 *yǐ* - Y - 為 *wéi* - Z 'X takes Y as Z' is ambiguous between the causative and the putative interpretation (cf. ex. 28, adapted from Lien 2003a:6).

(28) 以　　　長安　　　君　　為　　　　　質
　　　yǐ　　*Cháng'ān*　*jūn*　*wéi*　　　*zhì*
　　　take　Chang'an　　prince　as/make　　hostage
　　　'Take the prince of Chang'an as a hostage'

The causative reading of the sentence above, according to Lien (2003a), would be one according to which the agent's activity causes the prince of Chang'an to become a hostage (i.e. he makes the prince of Chang'an become a hostage). The causal interpretation involves a causal relation between the two events, and therefore here something has taken place turning the prince of Chang'an into a hostage. In contrast, according to the putative interpretation, Y and Z are not the same, "yet the subject (the agent) tries to establish a metaphorical relation between them in terms of the semiotic principle of iconicity (Peirce 1955). In other words, a metaphorical mapping is explicitly expressed here since both sources (Y) and (Z) are present" (Lien 2003a:7).

As we have already pointed out, morphological causatives built by means of affixation gradually disappeared, giving rise to tonal and voicing contrast in Middle

Chinese. However, causatives formed by tonal and voicing contrasts, in turn, have been lost and cannot form causatives in Modern Chinese. Modern Chinese has just a few relics of such devices of causative formation and a few lexical causatives. Of all the means by which Old Chinese could form causatives, only the syntactic means survived. Furthermore, as we will see in 3.4.2 and 3.4.3, Middle Chinese developed other analytic constructions: the resultative construction and resultative compounds.

3.3.3.1 Syntactic causatives in Mandarin Chinese

As we have already highlighted, the periphrastic causative is the only means of causativization of Old Chinese that survived in Modern Chinese. In this section we will briefly illustrate periphrastic causatives formation in Contemporary Mandarin Chinese.

Periphrastic causatives in Mandarin Chinese can make use of three different causative verbs: 使 *shǐ*, 让 *ràng* and 叫 *jiào*[16]. As we have already seen (cf. 3.3.3), the oldest causative is 使 *shǐ*, which was already used in Old Chinese; 叫 *jiào* appeared in Middle Chinese, while 让 *ràng* arose in Modern Chinese (cf. Xu 2006:129): in each case the causative construction has the form of 'NP$_1$+ CAUS + (NP$_2$)+V$_2$'.

According to Xu (2006), periphrastic causatives in Mandarin Chinese can be divided into two groups: the causatives with an abstract meaning, built around 使 *shǐ*, and the causatives which can express either an abstract meaning or a concrete meaning, expressed by 让 *ràng* and 叫 *jiào*. Xu states that causatives with an abstract meaning can be expressed in English by 'get (or make, we add) sth. A' (e.g. *make it big*), while causatives with a concrete meaning can be compared to English 'make someone do/ cause someone to do' (e.g. *I make him wash his hands*).

Moreover, the causative verb 使 *shǐ* is more literary and more likely to be found in written texts, while 让 *ràng* and 叫 *jiào* are more colloquial (cf. Teng 1989, Xu 2006). As highlighted by Xu (2006:129), another important difference lies in the fact that while 使 *shǐ* cannot express passive meaning, 让 *ràng* and 叫 *jiào* are used also to

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[16] All these three verbs can also be used as full verbs in Mandarin Chinese (cf. Xu 2006:130): 使 *shǐ* 'send, use', 让 *ràng* 'yeld' and 叫 *jiào* 'cry, call, order'. Norman (1982:245) observes that these two Northern Chinese passives formed with the causative verbs 让 *ràng* and 叫 *jiào* are unique among Sinitic languages, which commonly use verbs of giving to express both causatives and passives (cf. Chappell & Peyraube 2006). According to Norman, this is due to the Manchu superstrate influence; in Manchu and other Altaic languages the same structure can be used to express both passive and causative meaning (cf. Chappell 2001).

form passives (together with the more formal 被 *bèi* passive marker). To use the same morpheme for both causative and passive meanings is a common phenomenon in East Asian languages (e.g. Yap & Iwasaki 1998)[17]; often verbs of giving acquire this function (cf. fn. 16).

In (29) some examples with causative constructions with 使 *shǐ*, 让 *ràng* and 叫 *jiào* are presented:

(29) a. 这 件   事   让   他   高兴。
         zhè jiàn shì ràng tā   gāoxìng
         this CL   event CAUS he   happy
         'This event made him happy.'
         (Adapted from Xu 2006:130)

      b. 我 让   他   解释 一下。
         wǒ ràng tā   jiěshì yīxià
         I CAUS he   explain one time
         'I let him explain.'
         (Adapted from Teng 1989:230)

      c. 这 个   孩子 叫   我   很   满意。
         zhè ge   háizi jiào wǒ   hěn   mǎnyì
         this CL   child CAUS I   very   satisfied
         'This child makes me very satisfied.'
         (Adapted from Xu 2006:130)

      d. 他 使   我   很   生气。
         tā shǐ wǒ   hěn   shēngqì
         he CL   I   very   angry
         'He made me very angry.'
         (Adapted from Teng 1989:230)

      e. *他 故意   使   我   喝   了   很   多   酒。
         tā gùyì   shǐ wǒ   hē le   hěn   duō   jiǔ
         he deliberately CAUS I   dring ASP   very   many   alcohol
         'He deliberately made me drink a lot of wine.'
         (Adapted from Teng 1989:230)

The sentences in (29a), (29c) and (29d) express abstract causatives: in this case, 使 *shǐ*, 让 *ràng* and 叫 *jiào* may all appear in the construction. However, sentences in (29b) and (29e) express concrete causatives; 使 *shǐ* is not allowed (29e). According to Xu (2006), abstract causatives require precise restrictions on V_2, which has to express a [-volitional], [-concrete] action, thus verbs expressing feelings are more compatible with the abstract causative. Therefore, since 使 *shǐ* can express only abstract

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[17] It has been suggested that passive constructions can arise from causative constructions via the permissive and reflexive context (c.f. Keenan 1985, Haspelmath 1990, Knott 1995, among others).

causatives, it cannot appear in sentences like the ones in (29b) and (29e), where V$_2$, 喝 *hē* 'drink', is a [+volitional], [+concrete] action.

In contrast, 让 *ràng* and 叫 *jiào* causatives impose no restrictions and can express both abstract and concrete causative meanings. If we consider the distinction between direct and indirect causation (cf. 2.3), 让 *ràng* and 叫 *jiào* apparently can express both those meanings; moreover, 让 *ràng* and 叫 *jiào* may express different causation meanings, ranging from coercive to permissive (cf. 2.3, ex. 11), as in the example in (30) presented in Teng (1989:234), which has two possible readings[18]:

(30) 我　　让　　他　　说　　了　　几　　句。
　　 wǒ　*ràng*　*tā*　*shuō*　*le*　*jǐ*　*jù*
　　 I　　CAUS　he　　say　　ASP　some　word
　　　a. 'I had him say a few words.'
　　　b. 'I let him say a few words.'

Therefore, 让 *ràng* and 叫 *jiào* can express causative meaning both in a broad and in a strict sense.

3.4 Causatives: The passage from Old Chinese to Middle Chinese

As we have already pointed out, by the time of Middle Chinese affixes were completely lost; Chinese developed tones and some functions previously expressed by means of affixes started to be expressed by tonal or voicing contrasts. At this stage, causativity was still morphological in nature, even though the cause was not independently expressed any more by means of affixes. These means eventually disappeared as well, leaving just a few relics in Modern Chinese.

Middle Chinese started to develop other kinds of strategies to express causativity, namely the resultative construction and resultative compounds. In the next sections we give an overview of these phenomena which help highlight the typological change in the Chinese language.

3.4.1 Tones and voicing contrasts

As we have already seen, Old Chinese did not have a phonetic system of tones. However, in the passage from Old to Middle Chinese, the language underwent a morphological and phonological simplification (cf. 1.2); as a result of the loss of final

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[18] It can also have a passive reading, i.e. 'I got criticized by him'.

laryngeals tones arose (cf. Sagart 1999:101-102). Middle Chinese syllables were divided into four categories: 平 *píng* 'level', 上 *shàng* 'rising', 去 *qù* 'departing' and 入 *rù* 'entering', corresponding to tones in Modern Chinese (cf. Song 1997, Pulleyblank 2004, Schuessler 2007, among others). According to Pulleyblank (2004), during the Late Middle Chinese period, a further split occurred into upper and lower registers due to the devoicing of initial obstruents, giving rise to eight tone classes: these have been simplified, as in the case of Mandarin Chinese, or further elaborated in different dialects. The four tones in Mandarin Chinese correspond roughly to the four Middle Chinese categories (cf. Pulleyblank 2004): 八 *bā* 'eight' (阴平 *yīn píng* 'upper level' = first tone), 拔 *bá* 'pull' (阳平 *yáng píng* 'lower level' = second tone), 把 *bǎ* 'grasp' (上声 *shàng shēng* 'rising tone' = third tone), 爸 *bà* 'father' (去声 *qù shēng* 'departing tone' = forth tone). The Middle Chinese level tone has become two different tones in Mandarin (upper and lower level), while the entering tone has disappeared (cf. Ramsey 1989).

Going back to Middle Chinese, the entering tone, consisting of syllables ending in a stop consonant, was not "tonal", phonetically speaking (cf. Pulleyblank 2004:1731). Moreover, apparently also the rising and the departing tones developed out of segmental features at the end of the syllable: a final glottal stop (rising tone) and the suffix *-s* (departing tone; cf. also Song 1997). Therefore, tones apparently have a morphological origin (cf. for example Pulleyblank 2004): some of the contrasts that were expressed by means of affixation in Old Chinese happened to be expressed by tonal contrast in Middle Chinese. The tones, thus, go back to earlier segmental affixes in Old Chinese (cf. Schuessler 2007). According to Schuessler (2007:40), tonal derivation had the following functions:

1. MC 去声 *qù shēng* 'departing tone' (< *-s / -h*) – exoactive: extrovert, often valence increasing.
   飲 *yǐn* < *ʔɨm* (rising tone) 'drink' → 飲 *yìn* < *ʔɨm* (departing tone) 'give to drink'
   聞 *wén* < *mun* 'hear' → 問 *wèn* < *mun* (departing tone) 'ask'
   買 *mǎi* < *mɛ* (rising tone) 'buy' → 賣 *mài* < *mɛ* (departing tone) 'sell'
2. MC 去声 *qù shēng* 'departing tone' (< *-s / -h*) – exopassive, i.e. passive of exoactive / transitive words, agent available.
   執 *zhí* < *tɕip* < *təp* 'hold, grasp' → 摯 *zhì* < *tɕi* (rising tone) < *təps* 'be grasped, sized'
   下 *xià* < *ga* (rising tone) 'descend, below' → 下 *xià* < *ga* (departing tone) 'be put down'

3. MC 上声 *shàng shēng* 'rising tone' (< *-ʔ) – endoactive: introvert, active, often valence decreasing.

張 *zhāng* < *ṭaŋ* 'stretch' → 長 *zhǎng* < *ṭaŋ* (rising tone) 'grow tall'
上 *shàng* < *dźaŋ* (departing tone) 'above' → 上 *shàng* < *dźaŋ* (raising tone) 'rise'

Relics of this kind of derivation are still present in Mandarin Chinese (cf. also Shi 2002), as for example 买 *mǎi* 'buy' → 卖 *mài* 'sell', 闻 *wén* 'hear' → 问 *wèn* 'ask'[19]. Other examples are 好 *hǎo* 'good' → 好 *hào* 'to love' and 磨 *mó* 'rub' → 磨 *mò* 'mill', where a word originally in level rising tone and its cognate in the departing tone still co-exist (cf. Pulleyblank 2004).

Besides tone contrast, in Early Middle Chinese there were many alternations involving a contrast between voiceless and voiced initial obstruents (清浊别义 *qīngzhuó bié yì*, cf. Pulleyblank 2004; cf. also Shi 2002): see the examples in (31) adapted from Pulleyblank (2004:1732); both the Mandarin Chinese pronunciation and the Early Middle Chinese one are given.

(31)   a. 見 *jiàn* < *kɛn^h* 'see'   vs.   見，現 *xiàn* < *ɣɛn^h* 'appear'
        b. 属 *zhǔ* < *ṭɕuawk* 'attach'   vs.   属 *shǔ* < *dʑuawk* 'be attached, belong'

The examples above also show that, in some cases, the voicing contrast is preserved in Modern Chinese as well.

Pulleyblank (1973:114-116) proposes that the voiceless-voiced contrast arises from a prefix *ă-, which was a non-syllabic, pharyngeal glide that caused voicing or, in some dialects, voiced aspiration of a following obstruent. It was apparently cognate to the Tibetan prefix *ḥă-čhuṅ* and to the prefix *ʔă-* in Written Burmese (cf. Pulleyblank 2004). As we have seen (cf. ex. 1), according to Baxter & Sagart (1998), the voicing contrast in examples like those in (31a) is the outcome of the *N- prefix. In contrast, according to Mei (2009), the voicing contrast in simplex/causative pairs already began to develop at some stage of Old Chinese, as a reflex of the causative prefix *s-, which Chinese inherited from Proto-Sino-Tibetan (cf. also Gong 2002): verbal affixes started to weaken, probably due to the simplification of consonant clusters (cf. Mei 1980) and eventually disappeared; 清浊别义 *qīngzhuó bié yì*, i.e. the voiceless/voiced contrast, arose and took over the function of the prefix *s-. Therefore, according to

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[19] In some cases, the contrast is still present in Mandarin Chinese, but one of the two members either has become a bound form or has undergone a change in meaning.

Mei (2009), the example in (1a) has to be reconstructed as in (32) (example adapted from Mei 2009; Modern Chinese added):

(32) a. 見 , 現 *gians > rien > xiàn 'appear'
      b. 見 (*s-gian >) *kians > kien > 见 jiàn 'see'

Whatever origin the voicing contrast might have, what is important to stress is that Middle Chinese had many simplex/causative pairs formed by this means: the non-causative member always had a voiced initial and the causative member a voiceless initial. The effects of the voicing contrast, as we have seen, in some cases are preserved in Mandarin Chinese. A couple of other examples are given in (33) below; we give the Middle Chinese pronunciation (as given in Mei 2009) and the Mandarin Chinese one:

(33) a. 長 djiang > cháng 'long' vs. 長 tjang > zhǎng 'grow, grow up'
      b. 繫 riei > xì 'tie, linked' vs. 繫 kiei > jì 'tie, fasten'

In Middle Chinese the voiced/voiceless alternation began to decline and eventually disappeared during the Tang dinasty (618-907 A.D.); by the time of Late Middle Chinese it got completely extinct (cf. Mei 1991). At this stage, as we have already stated before, Chinese underwent a dramatic change from a synthetic to an analytic language (cf. Mei 1991).

3.4.2 The rise of the resultative construction

Middle Chinese developed another device to express causativity, where the origin of the action and the type of action are made explicit, namely the so-called resultative construction ("separable resultative structure" in the terms of Shi 2002:48) and the resultative compound. In this section we focus on the separable resultative construction; we will focus on the development of resultative compounds in the next section.

The resultative construction was a widely used syntactic pattern in Middle Chinese (cf. Shi 2002); it typically consisted in a verb plus an adjective or an intransitive verb[20], where the constituents were in an action-result relation and could be separated by the patient of V_1 or by the modifier of the second constituent; thus, they were two

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[20] Other syntactic categories could be used as resultatives, as for example prepositional phrases or quantifiers (cf. Shi 2002:49-50).

independent constituents with an intervening syntactic element between them, as in the examples in (34), adapted from Shi (2002:49).

(34)   V₁ NP V₂
        a. 喚　　江郎　　　覺！
           huàn   Jiāng-Láng   jiào
           call   Jiang-Lang   awake
           'Call Jiang Lang awake!'
           (世說新語 'Shishuo xinyu', 假譎 'Jiajue', A.D. 425)
        b. 分　　肉食　　甚　　　均。
           fēn   ròushí   shén   jūn
           distribute   meat-food   very   even
           'He distributed meat and food very evenly.'
           (史記 'Records of the Grand Historian (Shiji), 陳丞相世家 'The House of (Prime Minister) Chen', 100 B.C.)

Shi (2002) regards these examples as complex sentences consisting of a nucleus plus an adjunct (cf. Hopper & Traugott 1993:169). According to Shi (2002), the rise of the separable resultative construction is one of the consequences of the decline of the verbal connective 而 *ér*. Shi (2002:53) points out that Modern Chinese lacks a particular conjunction to coordinate two verbs (like English *and*) and that verbal coordination is simply impossible, even without an overt marker, e.g. *看写信 *kànxiě xìn* 'read and write letters'. However, note that it is possible to coordinate two verb phrases by juxtaposition, as in (35):

(35)   我　　看　　书　　写　　　信。
        wǒ   kàn   shū   xiě   xìn
        I   read   book   write letter
        'I read books and write letters.'

Differently, in Old Chinese verbal coordination was expressed by means of the conjunction 而 *ér* (cf. Shi 2002:53), as in the example in (36)[21]:

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[21] Barbara Meisterernst (p.c.) points out that 而 *ér* is not a coordinative connective, but rather serves to connect a verbal or adverbial modifier to the main verb; thus V₁ is always an adverbial modifier of V2. Accordingly, the sentence in (36a) should be better translated as 'A leopard, striking from the back, killed him'. According to her, the only case in which 而 *ér* may be considered as a marker of coordination is when it connects two clauses which does not share a subject (as in the example 36b above), but even in that case the first clause is usually subordinate to the second clause.

(36) a. 豹　　　自　　后　　擊　　而　　殺　　之。
　　　bào　　*zì*　　*hòu*　　*jī*　　*ér*　　*shā*　　*zhī*
　　　leopard　from　back　strike　CONJ　kill　he
　　　'A leopard struck and kill him from the back.'
　　　(左傳 'Zuozhuan', 475 B.C. Adapted from Shi 2002:53)

　　b. 夫　俺　　也　者，質　直　而　好　義，　　察
　　　fū　*ǎn*　*yě*　*zhě*　*zhì*　*zhí*　*ér*　*hào*　*yì*　　*chá*
　　　man distinction PART person nature straight and love righteousness examine
　　　言　而　觀　色
　　　yán　*ér*　*guān*　*sè*
　　　word CONJ watch countenance
　　　'Now the man of distinction is solid and straightforward, and loves righteousness. He examines people's words, and looks at their countenances.'
　　　(論語 'Analects', 顏淵 'Yan Yuan; from *Chinese texts project*)

Therefore, coordination underwent a change from 'V$_1$ 而 *ér* V$_2$' to 'V$_1$-V$_2$'. Shi (2002) points out that when the two verbs are adjacent they are subject to compounding (we will return to this issue later on). In any case, due to the decline of 而 *ér* marker, conjoined clauses were left unmarked, as in the example in (37), adapted from Shi (2002:55):

(37) 攻　鄭　敗　之。
　　　gōng　*Zhèng*　*bài*　*zhī*
　　　attack　Zheng　defeat　he
　　　'(they) attacked Zheng country and defeated it.'
　　　(史記 'Records of the Grand Historian (Shiji)', 趙世家 'The House of Zhao', 100 B.C.)

According to Shi (2002), this change is the source of the separable resultative construction; specifically, the resultative construction would be directly related to the decline of the marker 而 *ér* in sentences where the second clause was an intransitive element, as in (38a), adapted from Shi (2002:56)[22]. The separable resultative construction started to occur around 100 B.C., and became a syntactic pattern around 500 A.D. In (38b) one of the first examples of the separable resultative construction found by Shi (2002:56) is presented:

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[22] According to Barbara Meisterernst (p.c.), the two verbs in (38a) are not in a paratactic relation, but rather V$_1$ modifies V$_2$ (cf. fn. 21).

(38) a. 如之何   其   使   斯民   饑   而   死   也。
       rúzhīhé   *qí*   *shǐ*   *sī-mín*   *jī*   *ér*   *sǐ*   *yě*
       why   he   make   these-people   starve   and   die   PART
       'Why did he make these people starve and die?'
       (孟子 'Mencius', 375 B.C.)

      b. 其   子   死，   哭   之   失明。
       Qí   *zǐ*   *sǐ*   *kū*   *zhī*   *shīmíng*
       He   son   die   cry   he   blind
       'His son died and he cried himself blind.'
       (史記 'Records of the Grand Historian (Shiji)', 仲尼弟子列傳 'Biography of the disciples of Zhongni', 100 B.C.)

Therefore, according to Shi (2002), the decline of the 而 *ér* marker made the two clauses subject to clause combination, increasing the dependence of one clause upon the other.

Shi (2002) points out that clause combination is a matter of degree: parataxis (minimal integration) < hypotaxis < dependence (maximal integration; cf. Hopper & Traugott 1993:169). Originally, the two constituents in a resultative construction were in a semantic relation of action-result but were completely independent from each other and there was a clause boundary between the action part and the resultative part. Later, the resultative part could no longer stand alone and became more dependent from the nucleus; the boundary became weaker but was not completely lost. Finally, the two verbs were integrated into a single constituent, the intervening material where put out the V-V combination and the whole V-V could be followed by a nominal object, showing the maximum degree of fusion and giving rise to the resultative compound. We address the issue of the development of resultative compounds in the next section.

3.4.3 The rise of resultative compounds

The rise of resultative compounds drew the attention of many scholars (cf. Yu 1957, Zhou 1958, Shimura 1974, Wang 1980 [1957-1958], Mei 1991, Wei 2000, Shi 2002, Xu 2006, among others). Most scholars who worked on this topic in the 1950s agree on the fact that the resultative compounds had been formed before the Han period (206 B.C.-220 A.D.), more precisely during the Qin period (221-206 B.C.), cf. Xu (2006). Ohta (2003 [1958]) assumes that causative (i.e. resultative) compounds arose at the latest during the Tang dinasty (618-907).

Mei (1991), along the line of the works by Ohta (2003 [1958]) and Shimura (1974), tried to single out compound verbs formed by V + 杀 (殺) *shā* 'kill' and V + 死 *sǐ* 'die' in text from the Han period (206 B.C.-220 A.D.). Apparently, these two kinds of verbs differed only in transitivity: V + 杀 (殺) *shā* 'kill' were transitive compounds, while V + 死 *sǐ* 'die' were intransitive and therefore could not be followed by an object (cf. Mei 1991). See the examples in (39), adapted from Mei (1991: 1-2; our translation).

(39) a. 岸崩，   盡   壓殺   臥   者。
　　　 Àn Bēng jǐn   yā shā   wò   zhě
　　　 An Beng completely press-kill lie-down   PART
　　　 'An Beng completely pressed and killed the person who lay down.'
　　　 (史記 'Records of the Grand Historian (Shiji)', 外戚世家 'The Houses of the Outside relatives')

　　　 b. 百   余   人   炭   崩   盡   壓死。
　　　 bǎi   yú   rén   tàn   bēng   jǐn   yāsǐ
　　　 hundred   surplus person charcoal collapse completely press-die
　　　 'More than one hundred people were all crushed by the fall of charcoal.'
　　　 (論衡 'Lunheng', 吉驗 'Jihan')

　　　 c. 李兌 之   用   趙   也   餓殺   主   父。
　　　 Lǐ Duì zhī   yòng Zhāo yě   èshā   zhǔ   fù
　　　 Li Dui PART serve Chao PART   starve-kill lord   father
　　　 'When Li Dui was serving Zhao, he starved the Father Sovereign to death.'
　　　 (韓非子 'Han Feizi')

　　　 d. 其 後   九   歲   而   君   餓死。
　　　 qí hòu jiǔ suì ér jūn èsǐ
　　　 that after nine year CONJ ruler starve-die
　　　 'After those nine years the ruler starved.'
　　　 (史記 'Records of the Grand Historian (Shiji)', 絳侯周勃世家 'The House of Zhou Bo, Marquis of Jiang')

As observed by Lin (2004), in compounds like those presented in (39), V_1 seems to act as an adverbial, without any effect on the thematic status of the arguments in the sentence. Huang (1995; cit. in Xu 2006) analyses these V-V compounds as right-headed compounds, with V_1 acting as a modifier. In fact, transitive V-V compounds must have a transitive V_2, while intransitive V-V compounds had an intransitive V_2; thus, some V-V compounds were already attested in Old Chinese but were not yet resultative compounds.

Mei (1991) observes that, in the data from the fifth century A.D., the object began to follow the sequence V + 死 *sǐ* 'die' too, and thus he assumes that by that time

resultative compounds were formed; Chinese did have resultative compounds by the period of Middle Chinese. According to Mei (1991), this phenomenon correlates with the disappearance of other devices. In particular, after the decline of the 清浊别义 *qīngzhuó bié yì*, i.e. the voiceless/voiced contrast, in Middle Chinese (cf. 3.4.1), many causative pairs were lost: words that previously showed the voiceless/voiced contrast lost the voiceless counterpart, as e.g. the already cited 敗 *bài* (cf. ex. 7), lost the causative (voiceless variant), i.e. *pway > bài* 'ruined, become defeated' and only preserved the intransitive (voiced) form, i.e. 敗 *bway > bài* 'ruined, become defeated'. At this stage, when these intransitive verbs appeared as second constituents in V-V compounds, they contributed to form verb-complement compounds[23].

Wei (2000) holds another view of the problem: as Huang (1995), he claims that in Old Chinese V-V compounds were right-headed, with V_1 acting as a modifier of V_2. After the reanalysis process, V_1 happened to become the main verb, while V_2 became a resultative verb. According to Wei (2000) this process correlates with the rise of the causative construction, i.e. NP_1+ 使 *shǐ* / 令 *lìng* + (NP_2) + V_2 (cf. 3.3.1), which bears a relationship with other kind of constructions as well (cf. Xu 2006:149).

Some studies (cf. Zhu 1958 and Shimura 1995 among others) speculate on the strict relation between compounding and the emergence of resultative compounds, even though the exact correlation is not clearly explained. Liu (2000) states that the first type of V-V compounds to emerge in Classical Chinese were coordinate compounds formed by synonyms or near-synonyms constituents (cf. also Pan 1982), e.g. 降落 *jiàngluò* 'fall + fall = descend', 隱藏 *yǐncáng* 'hide + hide = hide, conceal', 會合 *huìhé* 'converge + get together = join'. Later, other kinds of coordinate V-V compounds developed; among them, there are some compounds in which the two constituents are in a temporal sequence (e.g. 戰勝 *zhànshèng* 'fight + win = defeat/be victorious; 擊傷 *jīshāng* 'beat + wound = injure/wound), which according to Liu underwent metaphorical extension becoming compounds in causal sequence, due to context-induced interpretation.

Thereafter, some V_2s in V-V compounds turned into result V_2s; this brought about a series of analogies and, consequently, V-V compounds of different origins began to be recategorized as resultative compounds. Therefore, according to Liu (2000), the

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[23] Before the loss of the contrast, 敗 *bài* could appear as V_1 of V-V compounds as well (cf. Xu 2006: 162-163), e.g. 敗傷 *bàishāng* 'defeat + hurt = defeat and hurt'.

real motivation for the rise of resultative compounds is metaphorical extension, while compounding had its effect only on the process of analogy: it was the shared compounding form between V-V with result V_2 and other kind of V-V compounds that made the analogy possible.

Shi (2002), as we have seen in the previous section, hypothesizes that resultative compounds developed from the separable resultative construction; therefore, differently from what is agreed upon by many other authors, it should be a development which took place in Middle Chinese. Moreover, Shi (2002) links the fusion of the two constituents of a resultative construction to the disyllabification process (cf. 1.2): when disyllabic units became the basic phonological representation for the lexicon, two monosyllabic words, which frequently co-occurred in context, were highly subject to fusion. Therefore, according to Shi (2002), the disyllabification process, which was particularly strong in Modern Chinese, favoured the fusion of the two elements involved in the resultative construction.

Shimura (1995) proposes an analysis similar to the one proposed by Shi (2002): the resultative construction would be connected to the tendency to disyllabification and that its sources were both verbal coordination and separable resultative constructions. According to Shimura (1995), at a later stage, two serial verbs became idiomatized or fixed and, finally, the two verbs lost their original syntactic equality; the second one was detransitivized: e.g. 打杀 *dǎshā* 'beat-kill' → 打死 *dǎsǐ* 'beat-die', the second verb turning from transitive into intransitive. According to Shi (2002), the separable resultative construction only gave rise to resultative compounds, while verbal coordination could give rise to other kinds of compounds (e.g. 检查 *jiǎnchá* 'check-check', i.e. coordinate compounds, cf. chapter 1). Moreover, Shi (2002) highlights that there is no evidence that the second verb in verb coordination underwent detransitivization, but rather some uses of verb coordination were replaced by resultative compounds, as in the already mentioned 打杀 *dǎshā* 'beat-kill' → 打死 *dǎsǐ* 'beat-die', where the coordination of two transitive verbs was replaced by a resultative structure with an intransitive V_2.

Therefore, according to this hypothesis, resultative compounds arose from the re-analysis of what can be considered a kind of verbal serialization[24], which involves

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[24] Remember that we have argued, following Paul (2008), that serial verb construction is but a superficial label applied to all sequence of verbs with present no overt marker of subordination or

two verbs in a subordinate relation of action-result, characterized by object sharing and by not having any overt marker of subordination; this kind of construction was lost in Mandarin Chinese. Xu (2006:172-174) points out that only some $V_1 + O + V_2$ constructions are linked to the development of resultative compounds. According to Xu, when the V_2 in these constructions has the semantic feature [+finish], the resultative construction and the resultative compound may correspond. For a period, the $V_1 + O + V_2$ construction, with V_2 [+finish], coexisted together with the resultative $V_1 + V_2$ compound (with V_2 [+finish]), and eventually V_1-V_2 became a resultative compound. In contrast, when V_1 and V_2 both express a starting point, the $V_1 + O + V_2$ construction cannot correspond to a resultative compound, but can be a pivotal construction or another kind of construction expressed by a sequence of two verbs without any overt marker of subordination or coordination of any sort (as we have already seen, this is what is often called a 'serial verb construction' in the literature, cf. 1.3.4.2.2). See the examples in (40), adapted from Xu (2006:172-173):

(40)   a. 飲   酒   醉
           yǐn   jiǔ   zuì
           drink   alcohol   drunk
           '[You Xianwang] drinks and is drunk'
           (史記 'Records of the Grand Historian (Shiji)', 匈奴列傳 'Treatise on the Xiongnu')
        b. 飲   酒   畢
           yǐn   jiǔ   bì
           drink alcohol finish
           '[Wang] has finished drinking'
           (世說新語 'Shishuo xinyu', 方正 'Fangzheng')
        c. 飲   酒   出
           yǐn   jiǔ   chū
           drink alcohol go-out
           '[When Shi Su] goes out after having drunk'
           (國語 'Guoyu', 晉語 'Discourses of Jin' 1)

Apparently, the three constructions in (40) are alike: they present the same word order, i.e. $V_1 + O + V_2$, and have no overt marker which expresses the relation between the two verbs. Examples in (40a) and (40b) are different from (40c) only as far as V_2 is concerned: differently for V_2s in (40a) and (40b), V_2 in (40c) does not

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coordination (cf. 1.3.4.2.4). There is not a serial verb construction simply because we cannot define a definite set of rules with a predictable meaning associated with it; what is commonly called serial verb construction is a term that actually covers a wide range of different structures with different set of properties.

involve an endpoint, it is a [+begin/-finish] verb; the construction represents two separate events occurring in sequence, i.e. what Li & Thompson (1981) call 'consecutive' serial verb constructions (cf. 1.3.4.2.2). Xu (2006) points out that $V_1 + O + V_2$ is actually an elliptical form for other kinds of constructions attested in the classics; the real new construction, which began to develop in Middle Chinese, is the one in (40b), where a verb meaning 'finish' (畢 *bì*) overtly appears as V_2. Xu points out that $V_1 + $ 畢 *bì* 'finish' is more frequently attested that $V_1 + O + $ 畢 *bì* 'finish': starting from Middle Chinese, resultative verbs with V_2 meaning 'finish' arose. Besides 畢 *bì* 'finish', other verbs meaning 'finish, end' could appear as V_2s in these constructions, i.e. 已 *yǐ* (which most likely is the predecessor of 了 *liǎo*, see below), 訖 *qì*, 竟 *jìng* (cf. Jiang 2001b and 2007, Xu 2006), e.g. 食竟 *shíjìng* 'eat-finish = to have eaten', 看竟 *kànjìng* 'read-finish = to have read', 視訖 *shìqì* 'observe-finish = to have observed', 飲訖 *yǐnqì* 'drink-finish = to have drunk' (cf. Xu 2006:171)[25].

After the Tang period (618-907), the meaning of 'finish' started to be predominantly expressed by 了 *liǎo* and appeared both as $V_1 + O + $ 了 *liǎo* and as $V_1 + $ 了 *liǎo* (+ O), the latter being more frequent[26] and having the form of a resultative compound expressing accomplishment meaning. Therefore, it is clear that only a specific type of $V_1 + O + V_2$ construction is linked to resultative compounds and to the 'phase-complement' compounds (as they are often called in the literature; cf. Chao 1968, Li & Thompson 1981).

Xu (2006: 57-187) attributes the rise of resultative compounds to the typological change of Chinese and progressive disyllabification (cf. chapter 1 and 3.4.3) during the Han period. According to Xu (2006) the loss of phonological and morphological means of word formation led to the widespread development of disyllables and, consequently, the V_1V_2 order became more and more common. In Middle Chinese, verbs started to be used either as V_1 or as V_2: those expressing a starting point began to be used as V_1, while those having an end point started to be placed in the V_2 position. According to Xu, the syntactic distribution 'action + result' or 'start point + end point' was fixed from the Han period, i.e. the period during which the typological change of Chinese took place.

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[25] I am grateful to Barbara Meisterernst for suggesting this point.
[26] The verb 了 *liǎo* later developed into the perfective aspect marker 了 *le*.

Whatever the exact development of resultative compounds is, we assume that resultative compounds are an alternative strategy to express causativity after the loss of other morphological means and after the typological shift undergone by the language. In particular, resultative compounds are an alternative (analytic) means to express direct causation. As we will see in chapter 5, resultative compounds are causative in nature; they consist of a verb expressing an action and of a change of state verb (without an [init] feature) expressing the resultant state. Therefore, resultative compounds can be seen as a causatives in which not only the resultant state, but also the causing event is specified, differently from alternating verbs, where only the resultant state is specified, leaving the causing event unspecified (thus, a lot of different actions can bring about the resultant state, cf. L&RH 1995 and 2.4.2).

Besides resultative compounds, Modern Chinese developed another analytic means of forming causatives, i.e. compounds formed by a semantically light or dummy V_1 plus an intransitive change of state verb (as in the case of resultative compounds). The light verbs in such complex words do not express a particular action and, thus, do not specify the causing event, but they just spell out the causing event, acting as a sort of affixal element. In Mandarin Chinese, these are verbs such as 弄 *nòng* 'make, handle', 搞 *gǎo* 'do', 打 *dǎ* 'beat, strike, hit' (e.g. Ohta 2003 [1958]), as in 打倒 *dǎdǎo* '*dǎ* + fall down = overthrow', 弄死 *nòngsǐ* '*nòng* + die = kill (make die)', 搞坏 *gǎohuài* '*gǎo* + ruin = ruin, spoil, destroy' (examples from Ohta 2003[1958]:196). This alternative device can also be found in other Modern Sinitic languages: e.g. Taiwanese Southern Min (cf. Lien 1998, 1999) 拍 *phah4* 'beat, strike, hit' and Hakka 打 *da2* 'beat, strike, hit' (cf. Yeh 2008). We will deal with this issue in chapter 4, where we will claim that this kind of V_1s contribute to create an extra layer on top of verbs without an [init] feature, creating their causative counterpart. This is another strategy to express causativity replacing morphological and lexical causatives, which reflects the analyticity of Mandarin Chinese.

3.5 Concluding remarks

In this chapter we have dealt with the issue of the evolution of causativity in Chinese. This diachronic overview should have made clear that Chinese underwent a dramatic typological shift from a synthetic to an analytic language. While Old Chinese could express causativity by phonological and morphological means and also using lexical

causatives, some changes which took place in the language led to the disappearance of synthetic and lexical causatives, leaving Chinese only with syntactic causatives. As a consequence of this change, Chinese developed alternative analytic strategies, such as resultative compounds. As we will see, resultative compounds are causative in nature and express direct causation; the main difference between this kind of causatives and Old Chinese causatives is that resultative compounds can express the origin and modality of the action. They do not only express change of state but also origin and modality of the action that brings about the change of state (cf. Ohta 2003 [1958]).

The changes that took place in the language are crucial in order to understand causatives in Contemporary Mandarin Chinese. For this reason, in this chapter we have made an attempt to highlight the main steps in the development of causatives and to propose an analysis of the derivation of the causative alternation using Ramchand's (2008) framework, which we will adopt in the analysis of causatives in Modern Mandarin.

We have first shown that Old Chinese mainly expressed causativity by synthetic and lexical means, along with syntactic constructions, which however were rarely used.

By the time of Middle Chinese, these means disappeared, leaving their traces in the development of tones (and tone contrast) and in the 清浊别义 *qīngzhuó bié yì*, i.e. the voiceless/voiced contrast. At this stage, causatives were still morphological in nature, even though the cause was not independently expressed any more by means of affixes. Eventually this kind of causatives disappeared as well, leaving just a few relics in the Modern language; of all the causatives used in Old Chinese, only the syntactic ones survived. Moreover, Middle Chinese developed resultative compounds, another analytic strategy used to express causativity. The development of causatives in Chinese clearly shows that each language can express the very same meaning by different means, depending on its morpho-syntax and on the particular lexical items in its inventory (cf. Ramchand 2008).

We will deal with resultative compounds in chapter 5. In the next chapter we will illustrate the inchoative/causative alternation in Mandarin Chinese and we will focus specifically on causatives formed by means of light or dummy verbs, a further sign of the tendency to analyticity of Modern Chinese.

4. The causative alternation in Modern Chinese

4.1 Introduction

In this chapter, we deal with the issue of the causative alternation in Modern Chinese. As we have seen in the previous chapter, due to the typological shift, Chinese began to express causativity almost exclusively by analytic means. We will focus mainly on causative complex verbs formed with a light V_1.

In order to have a clear picture of how causative alternation works in Mandarin Chinese, we will first illustrate what kind of verbs can have a transitive causative use in this language, i.e. what are the verbs that can display the causative alternation. As we have seen in 2.4.1, L&RH (1995) state that verbs that regularly have transitive causative uses are externally caused verbs; in contrast, unergative verbs, (mainly agentive and internally caused), normally cannot have a transitive causative use. We have seen that Ramchand (*contra* L&RH 1995, Chierchia 2004 [1989], Reinhart 2002, among others) assumes the existence of a process of causativization, as a result of automatic structure building, which forms transitive verbs from verbs that do not contain an [init] specification in their lexical entry (cf. 2.4.2); in English this process would be due to the presence of a null lexical item with semantics of general causation. Therefore, according to Ramchand (2008), only verbs without an [init] feature in their lexical entry can undergo the causativization process. In what follows, after dealing with the issue of unaccusativity in Mandarin Chinese, we will show how verbs that can manifest the causative alternation (mainly by means of a light verb) are precisely those verbs that lack an [init] feature in their lexical entry, especially verbs of change of state.

It has been shown that in English many alternating verbs of change of state are deadjectival (cf. Levin 1993; L&RH 1995). In Mandarin Chinese the issue of adjectives and deadjectival verbs deserves attention. In fact, the category of adjective in Chinese has generated a continuous debate in the literature, and its existence has often been questioned: adjectives are often considered to be a special subclass of verbs. We will first defend the position that Chinese does have a separate class of adjectives, with its own features, and we will then focus on the issues of deadjectival verbs.

After showing a few cases of lexical causatives in Chinese, we demonstrate that Chinese has a process of causativization, which forms transitive verbs from verbs that do not have an [init] feature in their lexical entries by means of light verbs, like 弄 *nòng* 'make', which we claim is an *init* causative head. Light verbs would correspond to the null *init* head in English (cf. 2.4.2) and would build an extra-layer on top of verbs lacking an [init] feature. Therefore, it seems that in Chinese the direction of the causative alternation is from intransitive to transitive, since the light verb explicitly marks the transitive version.

Furthermore, we will focus on the development of the verb 打 *dǎ* 'hit, beat, strike' and on its role as a light verb, comparing it with similar items in two other Sinitic languages, i.e. Taiwanese Southern Min and Hakka. We will also propose the existence of another light verb, i.e. 加 *jiā* 'add, increase', which seems to form the transitive version of deadjectival verbs based on open-range adjectives, more precisely of those involving an increase in the property denoted by the adjective.

We will then show how causative verbs formed with a light verb, when surface as intransitives, are not unaccusatives but rather pseudo-passives; according to us, this is due to structural reasons, given the explicit presence of a causative component (i.e. the causative light verb).

Lastly, we will compare deadjectival verbs formed with a light verb with those formed with the suffix 化 *-huà* '-ize; -ify; -en', which seems to represent a very productive pattern of word formation in Mandarin Chinese, and we will claim that, differently from causative light verbs, the suffix 化 *-huà* is specified for both [init] and [proc] features.

4.2 Unaccusativity in Mandarin Chinese

It has been proposed that in Chinese, as in other languages, it is possible to distinguish unaccusatives from unergatives (cf. Huang 1991, Yu 1995, Yuan 1999, Xue 2007). Huang (1991), for example, suggests that in Chinese verbs of existence, e.g. 有 *yǒu* 'have', 在 *zài* 'stay', and verbs of appearance and disappearance, e.g. 来 *lái* 'come', 到 *dào* 'arrive', 死 *sǐ* 'die', 跑 *pào* 'escape', are unaccusatives: they have an underlying object but not a subject (cf. 2.4.1). In contrast, agentive verbs like 哭 *kū* 'cry' or 跳 *tiào* 'jump' are unergative: they have an underlying subject. According to

Huang (1991), one of the reasons to assume that verbs like those in (1) and (2) are unaccusatives, i.e. they have an underlying object, is that they can appear in 'inverted' structures (see also Liu 2007), as it is shown in the sentences (1b) and (2b). In contrast, unergative verbs cannot appear in the inverted structure (3)[1].

(1)   a. 客人   来   了。
          kèren   *lái*   *le*
          guest   come ASP
          'The guests came / are here.'
      b. 来   了 客人。
          lái   *le*   *kèren*
          come ASP guest
          'The guests came / are here.'
(2)   a. 父亲   死   了。
          fùqin   *sǐ*   *le*
          father   die ASP
          'The father died.'
      b. 死 了   父亲。
          sǐ   *le*   *fùqin*
          die ASP   father
          'The father died.'
(3)   a. 孩子   哭   了。
          háizi   *kū*   *le*
          child   cry ASP
          'The child cried.'
      b. *哭 了   孩子。
          kū   *le*   *háizi*
          cry ASP   child
          'The child cried.'

According to Huang (1991), another element which support the distinction between unaccusative and unergative verbs is that the subject of unergative verbs is usually the agent, while the subject of unaccusative verbs is usually a non-agent, corresponding to an internal argument. Huang states that in the examples in (1a) and (2a) the subject is a theme, not an agent. In the HDYC (1999), unaccusative verbs can be generally distinguished form other verbs as being those which can take as their

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[1] However, Yuan (1999) highlights that some unergative verbs indicating manner of motion can also place their argument in the surface object position with the addition of a directional phrase:
从 床   上   跳下来   几   个   孩子。
cóng chuáng shàng tiào-xiàlai   jǐ   ge   háizi
from bed   on   jump-come down some CL   child
'A few children jumped down from the bed.' (From Yuan 1999:280)
We return to this issue later on in this section.

object a 施事 *shīshì*, which in the XHGC (2004) is defined as "the subject of the action, namely the doer of the action or the person or thing that undergoes the change (different from a 'patient'). For example, 小明 *Xiǎo Míng* 'Xiao Ming' in 小明弹琴 *Xiǎo Míng tánqín* 'Xiao Ming plays the piano', 树 *shù* 'tree' in 树长高了 *shù zhǎng gāo le* 'the tree grew tall', 老师 *lǎoshī* 'teacher' in 小红被老师批评 *Xiǎo Hóng bèi lǎoshī pīpíng* 'Xiao Hong was criticized by the teacher' (our translation)" [2]. For example, in the object position of a verb like 断 *duàn* 'break' only a 施事 *shīshì* 'undergoer of the change' can appear, e.g. 断了一根铁丝 *duàn le yī gēn tiěsī* 'break ASP one CL iron wire = An iron wire broke'. In this way, we can also recognize verbs for which the inverted structure can be observed: 一根铁丝断了 *duàn le yī gēn tiěsī* 'one CL iron wire break ASP = An iron wire broke' vs. 断了一根铁丝 *duàn le yī gēn tiěsī* 'break ASP one CL iron wire = An iron wire broke'.

Therefore, as emerges from the examples given above, the sole argument of an unaccusative verb in Chinese can appear as a direct object at S-structure. This phenomenon has already been observed, for example, in Italian (cf. Burzio 1986, Belletti 1988, among others), where the sole argument of an unaccusative verb can appear either before or after the verb, e.g. *molte persone sono entrate* 'many people entered = many people entered' vs. *sono entrate molte persone* 'entered many people = many people entered'. Therefore, L&RH (1989, 1995) propose a distinction between surface unaccusativity and deep unaccusativity; as we have seen, in languages that display surface unaccusativity, like Italian or Mandarin Chinese, the argument of the unaccusative verb can appear either before or after the verb, i.e. either in subject or object position at S-structure, while in languages with deep unaccusativity the argument can appear only in surface subject position. As highlighted by Bresnan & Zaenen (1990), English (cf. Simpson 1983, L&RH 1989) and Dutch (cf. Perlmutter 1978, Levin 1986) are examples of languages with deep unaccusativity. However, Bresnan & Zaenen (1990) point out that it would be more proper to classify phenomena, rather than languages, as displaying either deep or surface unaccusativity.

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[2] 语法上指动作的主体，即动作行为的发出者、发生变化的人或事物 (跟"受事"相区别)。如"小明弹琴"里的"小明"，"树长高了"里的"树"，"小红被老师批评"里的"老师"。

As a matter of fact, English displays surface unaccusativity in some constructions[3], i.e. the *there* construction (4) (cf. Burzio 1986, Hoekstra & Mulder 1990, Levin 1986, L&RH 1995) and the locative inversion (5) (cf. Hoekstra & Mulder 1990, Levin 1986, L&RH 1995, among others).

(4) a. *There arrived a few people.*
     b. *There arose a great storm on the sea.*

(5) a. *Into the shop came a young couple.*
     b. *Beside me appeared an angel.*

According to Burzio (1986), in English only 'appearance' but not 'disappearance' verbs can appear in the *there* construction. Moreover, L&RH (1995) highlight that only a subclass of unaccusative verbs (verbs of existence, e.g. *exist, remain*; verbs of appearance, e.g. *appear, arise*) can appear in surface unaccusativity constructions; verbs of change of state are generally not compatible with such constructions.

In contrast, as we have already mentioned, in Mandarin Chinese, like in Italian, surface unaccusativity is not restricted to a particular kind of constructions, therefore it is a language with surface unaccusativity. According to Yuan (1999), in Chinese the internal argument can remain in object position as long as it is an indefinite DP, as in the case of the *there* construction in English[4], a phenomenon known as 'Definiteness effect' (DE), cf. Milsark (1977), Belletti (1988), Moro (1997), among many others; see the examples in (6), from Yuan (1999:279):

(6) a. 上　　个　月，　三　艘　船　在　这　　个　海域　沉　了。
        shàng ge yuè   sān sōu chuán zài zhè   ge hǎiyù   chén le
        last   CL month three CL ship in this CL sea-area sink ASP
        'Last month, three ships sank in the sea area.'

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[3] Also some Dutch constructions seem to display surface unaccusativity (cf. den Besten 1985).

[4] The English *there* construction requires indefinite (weak) DPs, while definite (strong) DPs are excluded: e.g. *There are cats in the garden* vs. **There are the cats in the garden*. However, some authors (cf. Rando & Napoli 1978, Lakoff 1987, Lumsden 1988, Li Y.H.A. 1990, Han 2001) have highlighted several exceptions to this constraint: e.g. *there is the outline of a human face in this puzzle* (Li Y.H.A. 1990:144). When *there* is used deictically, it can be followed by a definite DP, as in the sentence *look, there's the soup ladle, on the table.* (cf. White 2008:252). Moreover, with a list reading, the DE is not observed: *who should we invite? Well, there is John, Mary, and me.* (cf. Li Y.H.A. 1990:144).

b. 上　个　月，　这　个　海域　沉　了　三　艘　　船。
shàng ge yuè zhè ge hǎiyù chén le sān sōu chuán
last CL month this CL sea-area sink ASP three CL ship
'Last month, three ships sank in the sea area.'

c. *上　个　月，　这　个　海域　沉　了　那　艘　　船。
shàng ge yuè zhè ge hǎiyù chén le nà sōu chuán
last CL month this CL sea-area sink ASP that CL ship
'Last month, that ship sank in the sea area.'

Therefore the DE seems to operate in Mandarin Chinese as well. However, as in English (cf. fn. 4), when existential sentences are formed with locative verbs (i.e. transitive or intransitive verbs that subcategorize for a locative phrase (cf. Huang 1987:288), like 住 *zhù* 'live', 坐 *zuò* 'sit', 躺 *tǎng* 'lie', 漂 *piāo* 'float' (which are generally considered as unaccusatives cf. Yang 1999), or 放 *fàng* 'put', 挂 *guà* 'hang', 刻 *kè* engrave' (transitives[5], cf. Han 2001), the DE is not observed (cf. Xue 2007)[6]. See the examples in (7):

(7) a. 床　　上　躺　着　　张三。
chuáng shàng tǎng zhe Zhāngsān
bed on lie ASP Zhangsan
'Zhang San is lying in the bed.'
(From Han 2001:149)

b. 桌子　　　上　放　着　　王　老师　的　　电脑。
zhuōzi shàng fàng zhe Wáng lǎoshī de diànnǎo
desk on put ASP Wang teacher DE computer
'On the desk is put the computer of professor Wang.'
(From Xue 2007:73)

As emerges from the examples in (1)-(7) and the related discussion, inversion would seem to be a diagnostic for unaccusativity in Chinese (e.g. Huang 1990). However, according to Liu (2007), it would be misleading to take inversion as a diagnostic for unaccusativity, since unaccusative verbs would include verbs of existence, appearance/disappearance and location, and also processes like 漂 *piāo* 'float', 吹 *chuī* 'blow' and 跑 *pǎo* 'run'. According to Liu (2007), including verbs like 漂 *piāo* 'float', 吹 *chuī* 'blow' and 跑 *pǎo* 'run' among unaccusatives raises some doubts, since they are unergative verbs cross-linguistically. Moreover, Liu points out

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[5] Xue (2007) points out that these verbs actually belong to the class that manifests the transitive/intransitive alternation. When they are used as intransitives in locative inversion constructions, they are usually regarded as unaccusatives through the process of deagentivization.

[6] On the DE in Mandarin Chinese and its exceptions, cf. also Huang (1987) and White (2008).

that there is no evidence which can prove, on the assumption that locative inversion is an unaccusative diagnostic, that the post-verbal DP is an object in the underlying representation: it is questionable whether all of the post-verbal DPs that occur in the construction originate as objects; for example, 跑 *pǎo* 'run' is usually assumed to have an underlying subject, not an underlying object.

Actually, two kind of different inversions have to be distinguished: inversions with a locative phrase (cf. 7) or without it (cf. 1-3) (cf. Yang 1999). This issue is dealt with in the next section; later on, we will discuss other diagnostics for unaccusativity in Chinese proposed in the literature.

4.2.1 Inversion as a diagnostic

As we mentioned in the previous section, there are two different kinds of inversion: inversion with a locative phrase and inversion without a locative phrase. Locative inversion in Chinese has the structure 'Loc + V + Asp + NP' (cf. Liu 2007)[7]; the locative phrase, which normally occurs in the final position with a preposition, in the inverted structure appears before the verb, without a preposition. See the examples in (8), adapted from Liu (2007:182).

(8)   a. 很　多　人　站　在　前面。
        hěn duō rén zhàn zài qiánmian
        very many person stand at in front
        'Many people are standing in front.'
    b. 前面　站　了　很　多　人。
        qiánmian zhàn le hěn duō rén
        in front stand ASP very many person
        'In front are standing many people.'

One characteristic of Chinese locative inversion is that, unlike English, not only intransitive verbs, but also transitive verbs can enter such construction (cf. Yang 1999, Liu 2007, Xue 2007). The examples in (9) show that locative inversion can be

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[7] This construction is also referred to as "existential sentence" (Huang 1987), "presentative sentence" (Hu 1995), and "existential structure" (Yang & Pan 2001).

observed with unaccusative verbs (9a), unergative verbs (9b) as well as with transitive verbs (9c)[8].

(9)   a. 这　条　　马路　上　　断　　了　　一　根　电线。　　(unaccusative)
          zhè tiào　mǎlù　shàng　duàn　le　　yī　gēn diànxiàn
          this CL　　street　on　　break　ASP　one　CL　electric wire
          'In this street, an electric wire broke.'
          (From Yang 1999:38)

    b. 河　里　　游　　着　　　一　　条　　鱼。　　　　　　(unergative)
          hé　lǐ　　yóu　　zhe　　yī　　tiáo　yú
          river in　　swim　ASP　one　CL　　fish
          'There is a fish swimming in the river.'
          (From Yang 1999:38)

    c. 院子　　里　　种　　着　　一些　果树。　　　　　　(transitive)
          yuànzi　lǐ　　zhòng zhe　yīxiē　guǒshù
          yard　　in　　plant　ASP　some　fruit-tree
          'In the yard are planted some fruit trees.'
          (Adapted from Liu 2007:183)

Given this behaviour, inversion with a locative phrase cannot be considered as a diagnostic for unaccusativity. Yang (1999) and Xue (2007) assume that only inversion without locative phrases can be considered as a valid test to distinguish unaccusatives from unergatives[9]. In fact, inversion without a locative phrase is observed only with unaccusatives, as shown by the examples in (10):

(10)   a. 断　了　　一　　根　　铁丝　　　　　　(unaccusative)
          duàn le　yī　gēn　　tiěsī
          break ASP　one　CL　　iron wire
          'An iron wire broke'
          (From HDYC 1999)

    b. *唱　　着　　大戏　　　　　　　　(transitive)
          chàng　zhe　dàxì
          sing　　ASP　opera
          '?There shows a Chinese opera'
          (From Yang 1999:38)

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[8] Liu (2007:183-184) further observes that an aspect marker is required for most of the verbs that occur in the locative inversion.

[9] It should be noted that in Chinese inversion without a locative phrase is apparently possible with any unaccusative verb. In contrast, as we have seen in the previous section, constructions that display surface unaccusativity in English are limited only to a subclass of unaccusative verbs.

c. *游　着　一　　条　　鱼　　　　　　　　　(unergative)
　　yóu zhe yī　　tiáo　yú
　　swim ASP one　CL　　fish
　　'?There swims a fish'
　　(From Yang 1999:38)

This could help to distinguish the verb 跑 *pǎo* 'run' (unergative), which can only appear in existential sentences with a locative phrase (e.g. 马路上跑着个青年人 *mǎlù shàng pǎo zhe ge qīngniánrén* 'road on run ASP CL young-people = There is a young man running on the road'; from HDYC 1999), from 跑 *pǎo* 'escape, run away' (e.g. 跑了一个犯人 *pǎo le yī ge fànrén* 'escape ASP one CL criminal = A criminal escaped'; from HDYC 1999). What seems to emerge from the above discussion is that inversion without a locative phrase can be consider as a diagnostic for unaccusativity in Chinese.

4.2.2 Aspect as a diagnostic

In line with what we have seen in the previous section, Pan (1996) argues that not all the verbs that undergo the locative inversion in Chinese are unaccusatives. Pan considers all the intransitive verbs appearing in the locative inversion as unaccusative, but, among transitive (detransitivized) verbs, only the ones that select the aspect marker 着 *zhe* are unaccusatives (11a).

(11)　a. 桌子　上　　放 着 / 了　　一　　本　　书
　　　　zhuōzi shàng fàng zhe / le　yī　　běn　　shū
　　　　table　on　　put ASP　　　　one　CL　　book
　　　　'On the table was put a book'
　　　　(Adapted from Pan 1996:410)
　　b. 盘　里　　切　　了 / *着　　几　　片　　黄瓜
　　　　*pán lǐ　　qiē　le / *zhe　jǐ　　piàn　huángguā*
　　　　plate in　　cut　ASP　　　a-few CL　　cucumber
　　　　'On the plate cut a few pieces of cucumber'
　　　　(Adapted from Liu 2007:188)

Pan (1996) proposes that there is a morphological operation that deletes the verb's external argument when the aspect marker 着 *zhe* is present. The derived argument structure is the same as that of intransitive verbs with a Theme argument, and thus the derived verb marked by 着 *zhe* is considered unaccusative. In Pan's analysis, among detransivized verbs, only verbs of state (if they select 着 *zhe*) and process are

unaccusative, while detransitive verbs denoting change are not. Liu (2007) observes that, cross-linguistically, verbs of process are unergative, while verbs of change are unaccusative, which contrast with the status assigned to detransivized verbs by Pan. Liu (2007) concludes that, since Pan provides no diagnostics for unaccusativity, it is not possible to evaluate why unaccusative verbs are grouped in this way in his analysis.

While Pan (1996) relies only partially on aspect markers to determine unaccusativity (only as far as detransitivized verbs are concerned), in Yu's (1995) approach, the selection of aspect markers is essential to assign the unaccusative status to verbs. Yu discusses three groups of intransitive verbs: the verbs in group 1 (e.g. 死 *sǐ* 'die', 来 *lái* 'come', 走 *zǒu* 'leave') can be followed only by the perfective aspect marker 了 *le* in existential sentences [10] and are considered to be prototypical unaccusatives; verbs in group 2 (e.g. 站 *zhàn* 'stand', 坐 *zuò* 'sit', 躺 *tǎng* lie') can be followed by both the perfective aspect marker 了 *le* and by the durative aspect marker 着 *zhe* (cf. Xiao & McEnery 2004) in existential sentences and are considered unaccusatives[11]; verbs in group 3 (e.g. 走 *zǒu* 'walk'，跑 *pǎo* 'run'，滚 *gǔn* 'roll') can only be followed by the durative aspect marker 着 *zhe* in existential sentences and are regarded as unergatives. Therefore, Yu (1995) considers selection of aspect markers as a diagnostic for unaccusativity in Chinese. See the examples in (12), (13) and (14), from Xue (2007:83):

(12)   a. 我　家　　来　　了　　几个　客人。　　　　　(group 1: unaccusatives)
        wǒ　*jiā*　*lái*　*le*　　*jǐ-ge*　*kèren*
        I　　house　come　ASP　several guest
        'Several guests visited my house.'

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[10] Following the classification proposed by Huang (1987:226), four kind of existential sentences may be distinguished in Chinese: sentences with the existential verb 有 *yǒu* 'have' (which are the closest counterparts of the *there-be* sentences in English); sentences with a verb of appearance or disappearance; sentences with a locative verb; sentences with a verb expressing the existence of an event or experience.

[11] According to Yu (1995), for 了 *le* marked verbs, the postverbal DP in locative inversion is an underlying object, while for 着 *zhe* marked verbs it is an inverted subject, adjoined to VP. As for verbs that can take both 了 *le* and 着 *zhe* markers, the postverbal DP is an underlying object when 了 *le* is selected, while it is an inverted subject when 着 *zhe* is selected. He provides two tests that correlate with the 了 *le*/ 着 *zhe* selection: the definiteness effect and sub-extraction; for a critic on his arguments, see Liu (2007), who highlights that neither of the two tests can be considered as diagnostic for unaccusativity.

b. *我　家　　来　　着　　几个　客人。

    wǒ jiā   lái   zhe   jǐ-ge   kèren

    I   house   come   ASP   several guest

    'Several guest are visiting my house.'

(13) a. 操场　　　上　　跑　　着　　许多　学生。 (group 3: unergatives)

    cāochǎng shàng pǎo zhe xǔduō xuésheng

    playground on   run   ASP   many student

    'There were many students running on the playground.'

b. *操场　　　上　　跑　　了　　许多　学生。

    cāochǎng shàng pǎo le xǔduō xuésheng

    playground on   run   ASP   many student

    'There were many students who run on the playground.'

(14) a. 门口　　　站　　了　　几个　老师。   (group 2: unaccusatives)

    ménkǒu   zhàn le   jǐ-ge   lǎoshī

    entrance   stand ASP   several teacher

    'There stood several teachers at the door.'

b. 门口　　　站　　着　　几个　老师。

    ménkǒu   zhàn zhe   jǐ-ge   lǎoshī

    entrance   stand ASP   several teacher

    'There were several teachers standing at the door.'

However, it has been shown that the selection of aspect markers cannot be a sufficient diagnostic for unaccusativity (e.g. Liu 2007). Xue (2007) highlights that, while Yu's (1995) verbs in group 3 (cf. 13), i.e. agentive unergatives indicating manner of motion, can only be followed by the aspect marker 着 *zhe*, other unergatives can be followed by the aspect marker 了 *le* in existential sentences (e.g. 笑 *xiào* 'laugh': 有三个人笑了 *yǒu sān ge rén xiào le* 'have three CL person laugh = Three persons laughed', cf. Xue 2007:84).

Moreover, Xue (2007) notices that, since verbs of group 3 behave like both group 1 and group 2 as for the selection of aspect marker, the selection of aspect marker cannot be a reliable test to distinguish unergatives from unaccusatives. Therefore, Xue concludes that, although the selection of aspect markers can be regarded as peculiar of Mandarin unaccusatives, it cannot be a sufficient diagnostic for unaccusativity.

4.2.3 The resultative construction and the causative alternation as diagnostics

Xue (2007) takes into account two reliable diagnostics for English unaccusativity, i.e. the resultative construction and the causative alternation, and tries to find out whether they can be used as a diagnostic for Chinese unaccusativity too.

First of all, Xue (2007:75-76) points out that, although Mandarin makes wide use of resultative compounds, differently from English (cf. L&RH 1995) this kind of construction is not a reliable diagnostic for unaccusativity. As we will see in the next chapter, in Chinese resultative compounds the result can be predicated either of the underlying object or of the underlying subject. Such behaviour contrasts with the English resultative construction, where the resultative phrase can be predicated only of the underlying direct object of a verb, e.g. *the river froze solid* vs. *we yelled hoarse*[12]. Therefore, according to Xue (2007), in Mandarin Chinese the resultative construction fails to distinguish the underlying object (of transitive and unaccusatives) from the underlying subject (of unergatives) and thus it is not a reliable diagnostics of unaccusativity (cf. Yang 1999).

Another reliable diagnostic for English unaccusativity is the ability to participate in the causative alternation (cf. L&RH 1995). L&RH (1995:80) highlight that many of the verbs considered as prototypical unaccusatives, mainly verbs of change of state, take part in the causative alternation, while prototypical unergatives do not. Therefore, the ability of a verb to participate in the causative alternation apparently correlates with the unaccusative classification of that verb; in particular, the causative alternation can be considered as a distinctive feature of change of state verbs.

Xue (2007) points out that in Mandarin Chinese some unaccusative verbs are distinguishable from other verbs in that they take part in the causative alternation. Xue provides examples of labile verbs (cf. 2.2), which, unlike English, as we will see later on, are quite rare in Chinese: e.g. 沉 *chén* 'sink', 灭 *miè* 'extinguish', 融化 *rónghuà* 'melt' (cf. also Yip 1995). Yang (1999) highlights that, like in English, in

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[12] As we will see in the next chapter, the Direct Object Restriction (DOR) predicts that if a verb does not have an object, it cannot appear with a resultative phrase (cf. L&RH 1995). If the verb in a resultative construction is an unaccusative, the resultative is predicated of the subject, and this is possible since it is a derived subject but an underlying object; unlike unergative verbs, unaccusatives cannot appear with fake reflexives and non-subcategorized NPs.

Chinese only unaccusatives can appear in the inchoative-causative alternation (15), while unergatives cannot (16).

(15)   a. 船   沉   了。
         chuán   *chén*   *le*
         boat   sink   ASP
         'The boat sank.'
      b. 水手们   沉 了   船。
         shuǐshǒu-men chén le   *chuán*
         seaman-PL   sink ASP   boat
         'The seamen sank the boat.'
         (From Yang 1999:37)

(16)   a. 小孩   哭   了。
         xiǎohái   *kū*   *le*
         child   cry   ASP
         'The child cried.'
      b. *妈妈   哭 了   小孩。
         māma   *kū*   *le*   *xiǎohái.*
         mother   cry   ASP   child
         *'The mother cried the child.'
         (From Xue 2007:78)

Therefore, in Chinese too the ability to participate in the causative alternation apparently correlates with unaccusativity. Nevertheless, as in English, not all unaccusative verbs participate in the causative alternation; verbs compatible with the inchoative-causative alternation are mainly externally caused verbs (verbs of change of state). The causative alternation, thus, can be seen as a diagnostic for unaccusativity: if a verb can take part in the causative alternation, then it is unaccusative. However, the reverse is not necessarily true, i.e. if a verb does not take part in the causative alternation, it does not necessarily mean that it is unergative. It should be noted that, as we will see, the causative alternation in Chinese is realized mainly through the addition of a light (or dummy) V_1; thus, not only being labile verbs (cf. Xue 2007), but also the possibility to appear with a causative light verb, should be considered a diagnostics for unaccusativity.

What seems to emerge from the discussion in this and in the preceding sections is that in Chinese the only reliable diagnostics to distinguish unaccusatives from unergatives are the inversion without locative phrase and the ability to participate in the causative alternation, which is in line with the conclusions drawn by Xue (2007).

4.2.4 A classification of Chinese unaccusative verbs

In the previous sections, we have seen some proposals related to which diagnostics can distinguish unaccusative verbs in Chinese. In this section we try to show the different kinds of Chinese unaccusative verbs. Table 1 summarizes different classifications proposed for Chinese unaccusatives, drawn from the literature on the topic (cf. also Xue 2007:62-63)[13].

Table 1. Mandarin Chinese unaccusatives

	Kind of unaccusative	Examples
Huang (1991)	• Existence	有 *yǒu* 'have', 住 *zhù* 'live'
	• Appearance	发生 *fāshēng* 'happen', 来 *lái* 'come'
	• Location	躺 *tǎng* 'lie'
Li Y.H.A. (1990)	• Presence	有 *yǒu* 'have', 站 *zhàn* 'stand', 坐 *zuò* 'sit', 躺 *tǎng* 'lie', 挂 *guà* 'hang', 放 *fàng* 'put'
	• Appearance	来 *lái* 'come', 出 *chū* 'go out', 起 *qǐ* 'rise',下 *xià* 'descend', 进 *jìn* 'enter', 到 *dào* 'arrive'
	• Disappearance	去 *qù* 'go', 死 *sǐ* 'die', 跑 *pǎo* 'run away', 逃 *táo* 'escape', 过 *guò* 'pass'
Yu (1995)	• Group 1 (aspect marker 了 *le*) - appearance / disappearance	到 *dào* 'arrive', 死 *sǐ* 'die', 来 *lái* 'come', 走 *zǒu* 'run away', 跑 *pǎo* 'run away'
	• Group 2 (aspect marker 了 *le* / 着 *zhe*) - posture	站 *zhàn* 'stand', 坐 *zuò* 'sit', 蹲 *dūn* 'kneel', 躺 *tǎng* 'lie'
Yip (1995)	• Presence	站 *zhàn* 'stand', 坐 *zuò* 'sit', 躺 *tǎng* 'lie'
	• Appearance	来 *lái* 'come', 起 *qǐ* 'rise',下 *xià* 'descend'
	• Disappearance	死 *sǐ* 'die', 跑 *pǎo* 'run away', 逃 *táo* 'escape'

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[13] The divisions are due to the fact that, as we have seen in chapter 2, although unaccusative verbs share the same syntactic representation, they are not a homogeneous class from the semantic point of view, and thus they can be divided in several subclasses (cf. L&RH 1995).

	•	Alternating (change of state)	融化 *rónghuà* 'melt', 灭 *miè* 'estinguish', 沉 *chén* 'sink', 破 *pò* 'break', 断 *duàn* 'break'
Cai (1999)	•	Existence / appearance	有 *yǒu* 'have', 存在 *cúnzài* 'exist', 消失 *xiāoshī* 'disappear', 死 *sǐ* 'die', 发生 *fāshēng* 'happen', 出现 *chūxiàn* 'appear'
	•	Posture	靠 *kào* 'lean', 躺 *tǎng* 'lie', 立 *lì* 'erect', 横 *héng* 'cross'
	•	Directed motion	到 *dào* 'arrive' 落 *luò* 'fall', 来 *lái* 'come', 去 *qù* 'go'
Yang (1999)	•	Existence, (dis)appearance	出 *chū* 'go out', 来 *lái* 'come', 死 *sǐ* 'die'
	•	Directed motion	下 *xià* 'descend', 降 *jiàng* 'fall'
	•	Change of state	灭 *miè* 'extinguish', 沉 *chén* 'sink', 破 *pò* 'break', 融化 *rónghuà* 'melt', 空 *kōng* 'empty', 败 *bài* 'defeat'
	•	Locative verbs	靠 *kào* 'lean', 挂 *guà* 'hang', 放 *fàng* 'put'
	•	Posture	站 *zhàn* 'stand', 坐 *zuò* 'sit', 躺 *tǎng* 'lie', 蹲 *dūn* 'kneel'
Xue (2007)	•	Externally caused, mainly change of state	沉 *chén* 'sink', 破 *pò* 'break', 融化 *rónghuà* 'melt', 断 *duàn* 'break', 开 *kāi* 'open', 倒 *dǎo* 'fall down'
	•	Inherently directed, mainly change of location	摔到 *shuāidào* 'fall', 跑来 *pǎolái* 'run over here', 来 *lái* 'come', 走 *zǒu* 'escape', 飞来 *fēilái* 'fly over here', 丢 *diū* 'throw away', 落 *luò* 'fall', 到 *dào* 'arrive', 去 *qù* 'go'
	•	Appearance and disappearance	发生 *fāshēng* 'happen', 死 *sǐ* 'die', 没 *méi* 'disappear'
	•	Existence	有 *yǒu* 'have', 住 *zhù* 'live'
	•	Placement / creation (through the process of deagentivization)	靠 *kào* 'lean', 挂 *guà* 'hang', 放 *fàng* 'put', 刻 *kè* 'engrave'
	•	Verbs of light emission	亮 *liàng* 'shine', 闪动 *shǎndòng* 'blink', 闪烁 *shǎnshuò* 'fliker'

Following the semantic classes of verbs singled out by L&RH (1995), we assume that Chinese has the following classes of unaccusative verbs:

- Externally caused verbs of change of state, e.g. 沉 *chén* 'sink', 破 *pò* 'break', 断 *duàn* 'break', 开 *kāi* 'open', 灭 *miè* 'extinguish';

- Verbs of existence, e.g. 住 *zhù* 'live'，存在 *cúnzài* 'exist';

- Verbs of appearance/disappearance, e.g 死 *sǐ* 'die', 发生 *fāshēng* 'happen'

- Verbs of spatial configuration, e.g. 坐 *zuò* 'sit', 站 *zhàn* 'stand',

- Verbs of inherently directed motion + some verbs of manner of motion, e.g. 到 *dào* 'arrive', 来 *lái* 'come', 去 *qù* 'go', 落 *luò* 'fall', 跑 *pǎo* 'run away', 逃 *táo* 'escape', 走 *zǒu* 'leave, escape', 流 *liú* 'flow';

- Verbs of emission, e.g. 闪 *shǎn* 'shine';

- Verbs of internally caused change of state, e.g. 长 *zhǎng* 'grow'

In what follows, we will briefly discuss each type of verbs we have included in the list of unaccusatives and show why we have included them among unaccusative verbs.

As we have seen (cf. exx. 6 and 15), externally caused verbs of change of state, like 沉 *chén* 'sink' and 断 *duàn* 'break', are classified as unaccusatives: they appear in the inverted construction without locative phrases and, also, participate in the causative alternation. As we will see in the next sections, unaccusative verbs that can have a transitive variant are mainly externally caused change of state verbs: they are either labile verbs or complex verbs formed with a light V_1. In English too verbs of change of state, being externally caused, represent the largest part of alternating verbs.

Besides externally caused change of state verbs, other verbs too display unaccusative behaviour, as for example verbs of existence (17a) and verbs of appearance/disappearance (17b-c). These verbs can be used in the inverted construction without locative phrases, with the subject appearing in object position, as in the examples in (17):

(17)   a. 存在   这   种   可能性
         cúnzài   *zhè*   *zhǒng* *kěnéngxìng*
         exist   this   CL   possibility
         'There is the possibility'
         (From *Concise English-Chinese Chinese-English Dictionary*, CECCED 2004)

b. 发生　　了　一　个　事故
　　fāshēng　*le*　*yī*　*ge*　*shìgù*
　　happen　ASP　one　CL　accident
　　'An accident happened'
　　(From the Nciku dictionary)
c. 死　了　两　棵　花
　　sǐ　*le*　*liǎng*　*kē*　*huā*
　　die ASP　two　CL　flower
　　'Two flowers died'
　　(From HDYC 1999)

As far as verbs of spatial configuration are concerned, they have been classified in different ways by different authors, as, for example, verbs of posture, of location or of presence (cf. table 1). What these verbs have in common is their association with a specific spatial configuration; according to L&RH (1995:126-127), three different meanings can be associated with the spatial configuration, i.e. the 'maintain position' sense, which describes the maintenance of a particular spatial configuration by an animate being (agentive), the 'assume position' sense, which describes an animate being assuming a particular position under his/her/its own control (agentive), and the 'simple position' meaning (non-agentive)[14], where the verb is normally predicated of inanimate (or animates "viewed" as inanimates) and describes the location of the entity it is predicated of (e.g. *The book lies on the table*)[15]. In the latter sense they show unaccusative behaviour.

In Mandarin Chinese too a few simple position verbs of spatial configuration apparently show unaccusative behaviour, e.g. 坐人 *zuò rén* 'sit person = A person sits', even though they are typically found in inverted constructions with locative

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[14] According to L&RH (1995), many verbs of spatial configuration, although apparently should be grouped with verbs of existence (cf. Hoekstra & Mulder 1990), have transitive causative variants, e.g. *the bicycle leaned against the fence* vs. *I leaned the bicycle against the fence* (L&RH 1995:128). However, L&RH (1995:129-133) show that the alternation for these verbs is different from the one involving externally caused alternating verbs like *break*. They point out that the morphological relationship between the causative and the non-causative senses of the simple position verbs is not always completely regular. Moreover, the semantic relationship between the causative and non-causative senses is not the same as the one between the causative and the non-causative senses of a verb like *break*: the intransitive simple position verb of spatial configuration is stative and means something like 'be in the spatial configuration designed by the verb' (cf. L&RH 1995:31). Therefore, simple position verbs of spatial configuration have a different lexical semantic representation from the one of externally caused change of state verbs.

[15] In the 'simple position' sense the locative phrase is obligatory, e.g. *the picture is hanging *(on the wall)*, cf. L&RH (1995:127).

phrases (note that in English simple position verbs of spatial configuration obligatory require locative phrases, cf. fn. 14)[16]:

(18)   a. 台 上　　　坐　　　着　　　主席团。
        táishàng   *zuò*   *zhe*   *zhǔxítuán*
        on the stage sit   ASP   presidium
        'The presidium sits on the stage.'
        (From HDYC 1999)
   b.门口　　　站　　　着　　　些　　　个　　　人
        ménkǒu   *zhàn*   *zhe*   *xiē*   *ge*   *rén*
        entrance   stand   ASP   some   CL   people
        'Some people stand at the entrance'
        (From XHGC 2004)

Furthermore, in Chinese verbs of inherently directed motion, and some manner of motion verbs too, display unaccusative behaviour. L&RH (1995) distinguish between verbs of manner of motion, like *run*, *walk*, *swim*, *roll*, *bounce*, and verbs of inherently directed motion, like *fall*, *come*, *go*, *arrive*. Verbs of manner of motion specify a manner of motion but not a directed motion, while verbs of inherently directed motion specify a direction (cf. Levin 1993). L&RH (1995) point out that one striking feature of verbs of inherently directed motion is that, although they can be used either agentively or non-agentively, they always show unaccusative behaviour. In Chinese (as well as in other languages, e.g. English and Italian, cf. L&RH 1995) verbs of inherently directed motion show unaccusative behaviour . First of all, they appear in the inverted construction without locative phrases, as shown in the examples in (19):

(19)   a. 来　　　了　　　客人
        lái   *le*   *kèren*
        come   ASP   guest
        'The guest came'
   b. 去　　　一　　　个　　　人
        qù   *yī*   *ge*   *rén*
        go   one   CL   person
        'A person goes'
        (From HDYC 1999)

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[16] Since these verbs appears mostly in inverted constructions with locative phrases, it is more difficult to prove their unaccusative status; in fact, we have seen that in Chinese unergative verbs too can show the inverted construction with a locative phrase (cf. examples in 8 and the related discussion). Furthermore, to the best of our knowledge, these verbs do not have a causative variant.

c. 那　天　　早晨　　就　到　了　　　两　　个　　小伙子。
 nà tiān zǎochén jiù dào le liǎng ge xiǎohuǒzi.
 that day morning then arrive ASP two CL lad
 'That morning two lads arrived.'
 (From HDYC 1999)

d. 落　冰雹　　啦！
 luò bīngbáo la
 fall hail   PART
 'Hail is falling!'
 (From the Academia Sinica Balanced Corpus of Modern Chinese)

e. 走　了　两　个　客人
 zǒu le liǎng ge kèren
 leave ASP two CL guest
 'Two guests left'
 (From HDYC 1999)

Moreover, verbs such as 来 *lái* 'come' and 去 *qù* 'go' seem also to be able to be used as transitives, as it is shown in (20), where the verbs 来 *lái* and 去 *qù* 'go' are used in the sense of 'cause to come', 'send (here)', 'bring' and 'cause to come', 'send (there)' respectively (cf. chapter 2, fn.23)[17]:

(20) a. 他　来　过　两　封　信。
   tā lái guo liǎng fēng xìn
   he come ASP two CL letter
   'He sent two letters (here / to me)'
   (From Lü 1980:252)

  b. 请　　　再　　来　一　瓶　　啤酒
   qǐng zài lái yī píng píjiǔ
   please again come one bottle beer
   'Bring me another bottle of beer, please'

  c. [...] 有的　队　只　来　了　个　代表
   yǒude duì zhǐ lái le ge dàibiǎo
   some group only come ASP CL delegate
   '[...] Some groups just sent one delegate'
   (From Lü 1980:252)

  d. 我　给　他　去　过　两　封　信。
   wǒ gěi tā qù guo liǎng fēng xìn
   we for he go ASP two CL letter
   'I sent two letters to him.'
   (From Lü 1980:342)

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[17] The verb 落 *luò* 'fall' as well can apparently undergo the causative alternation, reinforcing its status as an unaccusative verb. Among the definitions for 落 *luò* in XHGC (2004) there is the following one: 使下降 *shǐ xiàjiàng* 'cause to fall/descend', e.g. 把窗帘落下来 *bǎ chuānglián luò-xiàlái* 'BA window curtain fall-come down = to lower the window curtain'. Therefore, 落 *luò* 'fall' seems to be a labile verb.

e. 我们　　　只　　去　　了　　个　　代表
wǒmen 　*zhǐ* 　*qù* 　*le* 　*ge* 　*dàibiǎo*
we 　　　only 　go 　ASP 　CL 　delegate
'We just sent one delegate'
(From Lü 1980:342)

These verbs are those that, according to Chierchia (2004 [1989]), display the phenomenon of 'unstable valency': according to Chierchia, as we have seen (cf. 2.4.2), verbs like *come*, i.e. unaccusative verbs that lack a paired transitive, are exceptional. He considers a verb like *come* as related to a causative verb meaning something like 'bring', even though this meaning is either not lexicalized or lexicalized by a verb which is not morphologically related to the form used in the intransitive variant[18]. However, in some languages, this kind of verbs can have a causative use. According to Chierchia unaccusative verbs tend to be unstable in their valence, i.e. "They often oscillate in valency from transitive to intransitive and vice versa, both diachronically and cross-linguistically" (cf. Chierchia 2004 [1989]:40)[19]. These verbs are different from those of existence and (dis)appearance since, as pointed out by L&RH (1995), the latter do not have the property of being unstable in their valence; they can only be used intransitively.

While verbs of inherently directed motion always show unaccusative behaviour, verbs of manner of motion, like Eng. *roll*, when used agentively are unergative rather than unaccusative. In fact, L&RH (1995) highlight that the class of manner of motion verbs is not homogeneous at all: among them, they further distinguish between verbs which are typically used with animate agentive arguments (e.g. *run*, *walk*, *swim*) and those which are usually non-agentive (e.g. *roll*, *bounce*, *spin*). Agentive manner of motion verbs[20] are internally caused verbs that show unergative behaviour. In contrast, when verbs like *roll* are used non-agentively, they are externally caused and, thus, are unaccusative.

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[18] Remember that, according to Chierchia, unaccusative verbs are basically dyadic verbs; being derived from a causative predicate, they would be expected to acquire a causative use.

[19] In Taiwanese Southern Min, a Sinitic language spoken in Taiwan, this phenomenon can also be detected, e.g.:

靴　　　　　管　　　走　　　水。
hiah8 　　*kong2* 　*chau2* 　*chui2*
rain 　　　　boot 　　leave 　　water
'The rain boots leak water.' (From Lien 2003b:396)

[20] L&RH (1995:155) point out that although manner of motion verbs are mainly found with animate agentive arguments, some of them permit inanimate arguments as well, if these arguments have "self-controlled" bodies (e.g. *A battered boat was sailing on Lake Michigan*), thus it is more appropriate to classify them as internally caused manner of motion verbs rather than agentive manner of motion verbs.

In Mandarin Chinese too some manner of motion verbs apparently show unaccusative behaviour; for example, the verb 流 *liú* 'flow' shows inversion without a locative phrase (in the HDYC 1999, these verbs are listed as verbs that can take a 施事 *shīshì* 'subject of action or undergoer of the change' as its object; cf. 4.2), as in the example in (21):

(21)　a. 流　　了　　許多　血
　　　　liú　*le*　*xǔduō*　*xuè*
　　　　flow　ASP　some　blood
　　　　'Some blood flowed.'
　　　　(From the Academia Sinica Balanced Corpus of Modern Chinese)

In our list of Chinese unaccusative verbs we have also included verbs of emission, like 闪 *shǎn* 'shine'[21]; as a matter of fact, this verb can appear in the inverted construction without a locative phrase, e.g. 闪亮光 *shǎn liàngguāng* 'shine light = the light shines', 闪金光 *shǎn jīnguāng* 'shine golden ray = the golden rays shine' (examples from HDYC 1999).

Finally, we put among unaccusative verbs also 长 *zhǎng* 'grow', which is an internally caused verb of change of state. L&RH (1995) highlight that even though the vast majority of change of state verbs are externally caused, some of them can be internally caused as well, e.g. *blush*, *bloom*. In some languages, the eventuality described by internally caused verbs of change of state is regarded as a directed change, thus the corresponding verb shows unaccusative behaviour (e.g. Italian *arrossire* 'blush', which selects the unaccusative auxiliary *essere* 'be': *Bianca è arrossita* 'Bianca is blushed = Bianca blushed'). In Chinese too, some internally caused verb of change of state seem to behave unaccusatively. For example, a verb like 长 *zhǎng* 'grow' seems to show unaccusative behaviour; it can appear in the inverted construction without a locative phrase, as in the example in (22), from the PKU corpus.

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[21] L&RH (1995) point out that, while verbs of emission should generally be classified as unergatives (for a discussion, cf. L&RH 1995:138-144), some of them can be either internally or externally caused. They take into account verbs of sound emission that can be either externally caused by direct manipulation of the emitter or internally caused, describing the emission of sounds under the emitter's own control, e.g. clatter and rattle (cf. L&RH 1995:195-196).

(22) 天旱　　　　　　不　　长　　草
　　　tiānhàn　　　　*bù*　　*zhăng*　*căo*
　　　aridity weather　not　grow　grass
　　　'With dry weather grass does not grow'

Before closing this section we want to make a brief remark on the relation between unaccusative verbs and causativity. As we have mentioned (and as we will see in further detail), verbs that can be used transitively (causatively) among Chinese unaccusative verbs are mostly externally caused change of state verbs[22]. In some cases, verbs of inherently directed motion (which express a change of location) as well can have a causative variant. As highlighted by L&RH (1995:147), both these two subclasses of unaccusative verbs express a change that is characterized as 'directed'[23]. Therefore, unaccusative verbs with a transitive variant are mainly verbs of directed change (but also location), which, adopting Ramchand's (2008) framork, are verbs that lack the [init] feature in their lexical specification and have [proc], e.g. 开 *kāi* 'open'[24], or [proc, res] features, e.g. 断 *duàn* 'break'.

4.3 Chinese deadjectival verbs

As we have seen in the previous section, both in English and Chinese, intransitive verbs that can have a transitive (causative) variant are mostly unaccusative change of state verbs. As pointed out by L&RH (1995), the intransitive use of these verbs can be described as inchoative, approximately 'come to be in the state lexicalized by the verb' (p. 130); thus, it does not come as a surprise that in English many of the alternating verbs are morphologically related or identical to adjectives that name this state, e.g. *dry*, *empty*, and *soften*.

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[22] According to Pinker (1989), in English transitive verbs can only express direct causation. An internally caused eventuality cannot be construed as being directly caused by its very nature. In the absence of lexical causatives, the causative of an internally caused verb is expressed by periphrastic means, using the mechanisms that each language makes available for the productive formation of causatives. Only languages with causative morphemes allow unergative verbs to undergo a productive lexical process of causativization (cf. chapter 3, fn.5).

[23] In contrast, verbs of manner of motion, although involve a kind of change, do not involve a directed change.

[24] L&RH (1995) point out that there is a subset of the verbs of directed motion whose members are not necessarily telic, i.e. 'atelic verbs of directed motion', e.g. *ascend*, *descend*, *rise*, *fall*. Ramchand (2008:82, fn. 8) observes that the correlation of unaccusativity with telicity that has been claimed in the literature is not systematic under her system, since there are unaccusatives such as degree achievement verbs (cf. 4.3.3), which are not obligatorily telic despite conforming to unaccusative diagnostics in many languages.

Therefore, as we mentioned in 2.4.1, in English many alternating verbs of change of state are deadjectival (cf. Levin 1993, L&RH 1995). These deadjectival verbs can be either identical in form to the corresponding adjective (zero-related to adjectives), e.g. *dry, clear, narrow,* or formed by means of suffixation, e.g. *harden, widen, broaden.* These verbs are characterized as externally caused change of state verbs.

Mandarin Chinese have deadjectival verbs indicating change of state, i.e. verbs formed from stage-level adjectives (cf. Carlson 1977). However, unlike English, they can only be used intransitively; as we will see, the transitive variants of these verbs are formed by adding a light (or dummy) verb (cf. 4.5). The status of adjectives in Mandarin Chinese is an issue that has generated a great debate in the literature and the actual existence of an adjectival class in Chinese has often been called into question. In order to gain a better understanding on the topic, we will first briefly show that Chinese possesses an independent adjectival class and then we will go back to the question of deadjectival change of state verbs.

4.3.1 The adjectival class in Mandarin Chinese

In order to address the issue of deadjectival verbs in Mandarin Chinese, it is necessary to clarify what adjectives are in this language. It has often been claimed (cf. Li & Thompson 1981, Ross 1984, McCawley 1992, Larson 1991, Hengeveld 1992, Tang 1998, Lin 2004, among others) that Chinese does not have a class of adjectives distinct from verbs: according to this view, adjectives are a subclass of verbs. Li & Thompson (1981) use the label 'adjectival verbs', since, according to them, the vast majority of adjectives may function as verbs in Mandarin Chinese. Li Y. (1990:177, fn.2) treats Chinese adjectives as verbs; according to him, the strongest evidence in this sense is that in Mandarin Chinese adjectives can function directly as the predicate of a sentence without using any copula, as in the examples in (23):

(23)   a. 她　真　　漂亮。
          tā   zhēn   piàoliang
          she   really   beautiful
          'She is really beautiful.'
        b. 他　不　　聪明。
          tā   bù   cōngming
          he   not   clever
          'He is not clever.'

However, this seems to be a quite weak criterion, since in many languages adjectives can function as stative predicates without needing any copula; in Russian, for instance adjectives (and nouns), can function as predicates without using a copula (in the present tense), but this does not mean that Russian adjectives or nouns are verbs.

McCawley (1992) claims that Chinese does not have adjectives and those items that in English are adjectives correspond to verbs in Chinese. McCawley relies on a list of universals about the adjectival and verbal categories, which according to him are useful to determine the status of a given item as adjective or verb in a given language. See the list below (from McCawley 1992:232):

1) Vs can combine directly with an object, but As normally can't and thus require a P to introduce the object NP.

2) Vs can take up to 3 arguments; As take at most 2 arguments and usually take only 1.

3) As combine directly with Ns as modifiers, while Vs usually require some alteration, e.g. participial form, as in *sleeping child.*

4) Degree and comparative expressions combine more directly with As than with Vs, as far as morphology and word order are concerned.

According to McCawley (1992), the universal in 1) is reflected in A-V near-synonyms pairs, e.g. *like/fond*, as in *John likes Mary* vs. *John is fond of Mary* (cf. McCawley 1992:232); he believes that there is no such pair in Chinese[25].

As far as the second criterion is concerned, McCawley argues that it can help identifying the adjectival category only if two categories which systematically differ in terms of the number of arguments they allow have already been established. However, according to McCawley, it does not help in the present case, since there is

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[25] McCawley (1991) points out that one possible example of such kind of pairs could be represented by the two uses of the item 不满 *bùmǎn* 'dissatisfied':

a. 张三　　　不满　　　　李四。
   Zhāngsān　bùmǎn　　　Lǐsì
   Zhangsan　dissatisfied　Lisi
   'Zhangsan is dissatisfied with Lisi.'

b. 张三　　　　对　李四　不满。
   Zhāngsān　duì　Lǐsì　bùmǎn
   Zhangsan　by　Lisi　dissatisfied
   'Zhangsan is dissatisfied with Lisi.'

   (Adapted from McCawley 1992:233)

not yet a pair of such categories (see the discussion on universal 1 above) between which we can distinguish (cf. McCawley 1992:233).

McCawley (1992) suggests that the third universal (i.e. As combine directly with Ns as modifiers, while Vs usually require some alteration) could be very helpful to distinguish adjectives from verbs. Actually, Li & Thompson (1981:117) argue that in the sentence (24a), where an adjective modifies directly an NP, 好 *hǎo* 'good' is an adjective. However, McCawley (1992) points out that, if 好人 *hǎo rén* 'good person' is actually a phrase, 好 *hǎo* 'good' should be modifiable, able to occur with degree expressions and comparative phrases, but this does not seem to be possible (24b-c, adapted from McCawley 1992:234).

(24) a. 他 是   一   个   好   人。
     tā *shì* *yī* *ge* *hǎo* *rén*
     he   is   one CL   good   person
     'He is a good person.'
    b. *他 是   一   个   很   好   人。
     tā *shì* *yī* *ge* *hěn* *hǎo* *rén*
     he   is   one CL   very   good   person
     'He is a very good person.'
    c. *他 是   一   个   比   你   好   人。
     tā *shì* *yī* *ge* *bǐ*   *nǐ* *hǎo* *rén*
     he   is   one CL   compared to you   good   person
     'He is a better person than you.'

Given this behaviour, McCawley (1992) concludes that 好人 *hǎo rén* 'good person' is an instance of compounding rather than a phrasal unit.

Finally, concerning the fourth universal, McCawley argues that it cannot help identifying an adjectival class in Chinese, since degree and comparative elements always immediately precede a predicative element, even when they occur with those items that are verbs according to the first universal (i.e. those which combine directly with an object). See the examples in (25), adapted from McCawley (1992:236):

(25) a. 我　很　　喜欢　　　　张三[26]。
　　　wǒ hěn xǐhuan 　Zhāngsān
　　　I   very like   　　Zhangsan
　　　'I like Zhangsan very much.'
　　b. 我　比　　　　李四　喜欢　张三。
　　　wǒ bǐ　　　　Lǐsì xǐhuan Zhāngsān
　　　I   compared to Lisi like   Zhangsan
　　　'I like Zhangsan more than Lisi does.'

Moreover, McCawley points out that predicate elements which correspond to adjectives in European languages do not take a copula when used as predicates (see the discussion above). He thus concludes that Mandarin Chinese does not have an adjectival category and does not have a class of 'adjectival verbs' (cf. Li & Thompson 1981) either: those items which seem similar to adjectives actually are verbs and have no special categorial status.

Ross (1984) too denies the existence of an adjectival class in Chinese: according to Ross, Chinese has only the categories of noun and verb. Adopting Jackendoff's (1977) distinction of lexical categories[27], Ross concludes that in Chinese nouns and verbs are clearly distinct. In contrast, she denies the existence of adjectives, claiming that they are conflated with verbs. She assumes that those Chinese items that are translated as adjectives in English, e.g. 高兴 *gāoxìng* 'happy', are [+subject, -object]:

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[26] It should be noted that, generally speaking, the intensifier 很 *hěn* 'very' placed before adjectives in the stative predication loses its function and is used to neutralize the comparative/contrastive value that the sentence would otherwise have (e.g. 这间屋子大 *zhè jiān wūzi dà* 'this CL room big = this room is big' implies the comparison with another room: e.g. 这间屋子大，另一间屋子小 *zhè jiān wūzi dà lìng yī jiān wūzi xiǎo* 'this room is big, the other one is small'), cf. Lü (1980:182). Therefore, 这间屋子很大 *zhè jiān wūzi hěn dà* 'this CL room very big' means 'this room is big' rather than 'this room is very big'. In contrast, with stative verbs, 很 *hěn* 'very' keeps its function as intensifier, e.g. 我很喜欢看电影 *wǒ hěn xǐhuan kàn diànyǐng* 'I very like watch film = I really like watching films'. See also Kennedy (2005, cit. in Liu 2010), who considers 很 *hěn* as the positive morpheme in Chinese; according to Sybesma (1997), while European adjectives are unmarked for the positive degree (the comparative being morphologically marked), in Chinese the unmarked form is the comparative one and the positive degree is marked by 很 *hěn* (see also 现代汉语虚词例释 'Examples and Explanation of the Functional Words of Modern Chinese', XHXL 1982; Liu 2010). However, it is possible for an unmarked gradable adjective to occur as a predicate indicating positive degree in some constructions, e.g. in the negative construction with 不 *bù* 'not', as in (23b) (e.g. Zhu 1980).

[27] In English, lexical categories can be distinguished on the ability to take subjects and objects; verbs and nouns take subjects, while adjectives and prepositions do not; verbs and prepositions take NP objects, while nouns and adjectives do not (cf. Jackendoff 1977:32). Therefore, in this system nouns are [+ subject, - object], verbs are [+ subject, + object], adjectives are [-subjects, -object] and preposition are [-subject, +object]. Note, however, that subject and object marking do not uniquely identify grammatical category membership: for example, the features [+subject, -object] identify both nouns and intransitive verbs (cf. Ross 1984:2). Therefore, other properties are needed to distinguish between nouns and verbs, such as, for example, the occurrence with negators and specifiers: only verbs can be negated, and only nouns can take specifiers (cf. Ross 1984:2). The features subject and object are relevant for all four major categories, while negation and specifiers are properties relevant only for the noun-verb distinction.

they take subjects (26a) but not objects (26b), just as nouns and intransitive verbs (cf. fn. 27). Moreover, they can be negated (26c) but not specified (26d), in the same way as intransitive verbs do. See the examples in (26), adapted from Ross (1984:5):

(26)   a. 张三　　　　　　很　　高兴。
　　　　Zhāngsān　　　hěn　　gāoxìng
　　　　Zhangsan (subject)　very　happy
　　　　'Zhangsan is happy.'
　　　b. *张三　　很　　高兴　　李四。
　　　　　Zhāngsān　hěn　　gāoxìng　Lǐsì
　　　　　Zhangsan　very　happy　　Lisi (object)
　　　c. 张三　　　不　　高兴。
　　　　Zhāngsān　bù　　gāoxìng
　　　　Zhangsan　not　　happy
　　　　'Zhangsan is not happy.'
　　　d. *我 不　　明白　　　这　　个　　高兴。
　　　　　wǒ bù　míngbái　zhè　ge　gāoxìng
　　　　　I　not　understand　this　CL　happy

Given the examples in (26), Ross concludes that those items which apparently are adjectives (and are translate as adjectives in English) are actually intransitive verbs.

Hengeveld (1992) proposes that Chinese is a 'rigid language'[28] (i.e. a language that does not distinguish between two lexical categories) as far as adjectives (words expressing properties) and verbs (words expressing actions) are concerned. Neither actions nor properties have an overt structural codification when used as predicates, but require a grammatical morpheme, 的 *de*, when used as modifiers. According to Hengeveld, all these words are verbs, since modification always requires the overt presence of the grammatical morpheme 的 *de*, as in the examples in (27). However, we will see later on in this section that Hengeveld is wrong on this point.

(27)   a. 聪明　　　的　　姑娘
　　　　cōngming　de　　gūniang
　　　　clever　　DE　　girl
　　　　'Clever girl'
　　　b. 一　　些　　吃　　的　　东西
　　　　yī　xiē　chī　de　　dōngxi
　　　　one　some　eat　DE　　thing
　　　　'Some things to eat'

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[28] In a 'rigid language' there is no structural codification for parts of speech function but the same morpho-syntactic form is used for different categories.

This is an often-made point in the literature on the topic, where modifiers using 的 *de* have been analysed as relative clauses (Sproat & Shih 1988 and 1991, Duanmu 1998, Simpson 2001, among others) or as 'small clauses', deriving every modifier from an underlying predicate (den Dikken & Singhapreecha 2004). Should we conclude that Chinese does not possess an adjectival class then?

We do not believe that Chinese lacks adjectives all along and we think that it is possible to identify two different categories for verbs and adjectives on the basis of grammatical criteria internal to the language in question (cf. Croft 2003). Xu (1988, cit. in Dixon 2004) and Paul (2005, 2010) offer different criteria to isolate an adjectival class distinct from the verbal one in Chinese. Xu (1988) stresses the fact that verbs and adjectives show a different syntax when modifying a noun in a nominal phrase; they have different aspectual properties when used as intransitive predicates and have different derivational properties as well. Moreover, reduplication has different semantic implicatures for the two classes.

Paul (2010) points out that not all adjectives are predicative, since there is a class of non-predicative adjectives, i.e. items that function as modifiers but cannot act as predicates on their own (cf. Lü & Rao 1981), such as 方 *fāng* 'square', 共同 *gòngtóng* 'common', 原来 *yuánlái* 'original', e.g. 一个方的桌子 *yī ge fāng de zhuōzi* 'one CL square DE table = A square table'. When these adjectives are used as predicates, they need to be inserted in between the 是 *shì* (copula)...的 *de* construction (cf. Paris 1979, Paul 2010), e.g. 这个桌子*(是)方*(的) *zhè ge zhuōzi *(shì) fāng *(de)* 'this CL table be square DE = this table is square'[29]. According to Paul, the analysis of attributive adjectives as relative clauses or as small clauses is further challenged, since the non-predicative adjectives can be used only as modifiers and cannot function as predicates (cf. also Aoun & Li 2003)[30].

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[29] Paul (2010) notices that among non-predicative adjectives, non-intersective ones, like in Western languages, are completely excluded from predicative function, irrespective of the '是 *shì* (copula)...的 *de*' construction, e.g. *这个语言是共同的 *zhè ge yǔyán shì gòngtóng de* 'this CL language be common DE = this language is common' vs. 共同的语言 *gòngtóng de yǔyán* 'common DE language = common language'.

[30] In any case, Paul (2012) highlights that treating all modifiers as being derived from underlying predicates is a problem, since there is a wide range of non-predicative modifiers (NPs, PPs, adverbs) linked to the head noun by 的 *de* (cf. also Paul 2005, Tang 2007), e.g. 玻璃的桌子 [*bōli*]NP *de zhuōzi* 'glass DE table = glass table', 对问题的看法 [*duì wèntí*]PP *de kànfǎ* 'towards problem DE opinion = an opinion about the problem' (from Paul 2010:119).

Furthermore, it should be noted that there exist also the possibility for adjectives, but not for verbs, to modify an NP without using 的 *de*. Therefore, the 的 *de*-less modification allows to distinguish between (predicative) adjectives and stative verbs (cf. Paul 2010). It has often been claimed that the grammatical morpheme 的 *de* is obligatory only with polysyllabic adjectives, while it is optional with monosyllabic ones, e.g. 好朋友 *hǎo péngyou* 'good friend' (cf. Sproat & Shih 1988, 1991). However, Paul (2010) points out that modification without 的 *de* is possible with disyllabic adjectives as well, as shown in the examples in (28), adapted from Paul (2010:127 and 122 respectively):

(28) a. 一   件   脏 /   漂亮 /   干净   衣服
         yī *jiàn* *zāng* *piàoliang* *gānjìng* *yīfu*
         one CL   dirty pretty   clean   dress
         'A dirty / pretty / clean dress'
     b. 一   个   黑   漆   衣柜   (Fan 1958:215)
         yī *ge*   [*hēi* *qī*] *yīguì*
         one CL   black lacquer wardrobe
         'A black-lacquered wardrobe'

This contrasts with Hengeveld's (1992) assumption illustrated above, i.e. that modification always requires the overt presence of the grammatical morpheme 的 *de*. Furthermore, Paul (2010) highlights that both predicative and non-predicative adjectives can appear both in modification with 的 *de* and in modification without 的 *de*[31], as it is shown in the examples in (29): (29a) shows a modification with a non-predicative adjective, while (29b) shows a modification with a predicative adjectives[32].

(29) a. 一   个   方   (的)   桌子
         yī *ge*   *fāng* (*de*) *zhuōzi*
         one CL   square DE   table
         'A square table'

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[31] According to Paul (2010), the absence or presence of 的 *de* is associated with an interpretational difference; see the mentioned work for an illustration of this point.

[32] Lisa Cheng (p.c) pointed out that while 聪明人 *cōngming rén* 'clever person' (29b) is totally acceptable, 聪明学生 *cōngming xuésheng* 'clever student' is less acceptable, while 聪明老师 *cōngming lǎoshī* 'clever teacher' is weird. It would seem that the possibility to drop the marker 的 *de* is somehow linked to the kind of modified noun, but it is not clear at all what is the criterion guiding the choice. The semantics of the modified noun too seems to play a role (cf. Zhu 1980, among others). According to Paul (2010:128), there is a constraint which could help explain why 的 *de*-less modification is not always possible: "[...]the de-less modification structure gives rise to the interpretation of the 'A/N N' sequence as (a designation for) a newly created subcategory, in other words, the 'A/N N' sequence has to result in a natural, plausible classification. ".

b. 一　个　　胖 /　聪明　　　(的)　人
   yī　ge　pàng　cōngming　(de)　rén
   one　CL　fat　clever　　　DE　person
   'A fat /clever person'

This, according to Paul, would be unexpected if we consider modifiers as relative clauses; if this kind of analysis were correct, one would expect to find predicative adjectives only in modification structures with 的 *de* (which is obligatory with relative clauses)[33] and non-predicative adjectives only in modification without 的 *de*; this is not the case.

Finally, a further criterion that helps to set adjective apart from verbs is reduplication (cf. Paul 2010). Verbs (both transitive and intransitive ones) are always reduplicated as a whole, e.g. 知道 *zhīdao* 'to know' → 知道知道 *zhīdao zhīdao*, while, in the case of adjectives, each syllable is iterated, e.g. 高兴 *gāoxìng* 'happy' → 高高兴兴 *gāogāoxìngxìng*. Therefore, the reduplication pattern for a verb is [AB]$_V$ [AB]$_V$, while for an adjective is [AABB]$_A$ (cf. also Li & Thompson 1981:28-34, Abbiati 1998:88-90). While for disyllabic items the difference in reduplication between verbs and adjectives is clear-cut, in the case of monosyllabic items the difference cannot be caught at the segmental level, since both adjectives and verbs would assume the form of AA, e.g. 看 *kàn* 'look' → 看看 *kàn kàn*; 高 *gāo* 'high, tall' → 高高 *gāogāo*. However, Paul (2010) remarks that at the suprasegmental level they are clearly distinguishable: the second syllable of a reduplicated adjective has always the first tone, irrespective of the original tone, e.g. 小 *xiǎo* 'small' → 小小 *xiǎoxiāo*; in contrast, the second syllable of a reduplicated verb has always the neutral tone, e.g. 看 *kàn* 'look' → 看看 *kàn kan* (cf. Dragunov 1960:175, cit. in Paul 2010)[34]. The difference in reduplication pattern is not only a formal one; Paul (2010) points out that while reduplication of verbs results in the so-called 'tentative aspect' (cf. Chao 1968:204) or 'delimitative aspect' (cf. Li & Thompson 1981:29, 232-236), e.g. 看看

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[33] Interestingly, as highlighted by Paul (2010), differently from adjectives, stative verbs (and verbs in general) cannot act as modifiers of a head noun without the intervention of 的 *de*; this is due to the fact that they can act as modifiers of head nouns only as relative clauses, which always require the presence of 的 *de*, e.g. 担忧的人 *dānyōu* *(*de*) *ren* 'worry DE person = persons who worry' (from Paul 2010:123).

[34] Note that, while Abbiati (1998:90) agrees with Dragunov's view, arguing that in the reduplication of monosyllabic adjectives (what she calls 'attributive verbs') the second syllable usually takes the first tone, according to Li & Thompson (1981:33), the second syllable is unstressed, i.e. it is at the neutral tone.

kàn kan 'look look = have a look', reduplication of adjectives involves a higher degree of liveliness or intensity (cf. Chao 1968:209, Li & Thompson 1981, Tang 1988, Abbiati 1998). According to Paul (2010), this clearly shows that adjectives and intransitive stative verbs cannot form a single class. However, some remarks are needed. First of all, notice that some disyllabic adjectives, e.g. 高兴 *gāoxìng* 'happy', can also be reduplicated as [AB] [AB], i.e. 高兴高兴 *gāoxìng gāoxìng* (e.g. Li 1996:15, Yang 2003:121); in this case, they are formally alike disyllabic reduplicated verbs and have also the same kind of "tentative" (尝试 *chángshì*) meaning (cf. Li 1996, Yang 2003)[35], e.g. 高兴高兴 *gāoxìng gāoxìng* 'have some fun'. Therefore, disyllabic reduplicate predicative adjectives may be formally and semantically alike to disyllabic reduplicate verbs; however, verbs cannot reduplicate as [AABB], involving a high degree of intensity from the semantic point of view. Therefore, different possibilities of reduplication patterns ([AB] [AB] for verbs, and [AABB] or [AB] [AB] for adjectives) can still be employed to distinguish verbs from adjectives. Moreover, disyllabic modifier-head adjectival compounds, as e.g. 雪白 *xuě-bái* 'snow-white = as white as snow', are generally reduplicated as [AB] [AB], and thus they are formally alike reduplicated verbs (cf. Paul 2010, Yang 2003:122, Li 1996:7). However, in this case the difference concerns semantics: in fact, these [AB] [AB] reduplicated adjective imply higher degree of liveliness or intensity (cf. Yang 2003:122)[36]. It can be concluded, thus, that reduplication actually works differently for verbs and adjectives, enabling us to distinguish two different lexical categories.

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[35] Li (2003:15) also notices that some disyllabic [ABAB] reduplicated adjectives and verbs related to psychology and feelings, e.g. 高兴高兴 *gāoxìng gāoxìng* 'happy happy', 喜欢喜欢 *xǐhuān xǐhuān* 'like like', 快乐快乐 *kuàilè kuàilè* 'happy happy', when used causatively, usually convey the meaning of 'to make another person or oneself make some kind of experience', e.g.:

难道	我们	相互	温暖	一下，或者	说是	让	我 来	温暖
nándào	*wǒmen*	*xiānghù*	*wēnnuǎn*	*yīxià huòzhě*	*shuōshì*	*ràng*	*wǒ lái*	*wēnnuǎn*
is it possible	we	mutually	warm	a bit or	let's say	make	I come	warm

温暖	你，一切	就	会	好起来	的	吗？
wēnnuǎn	*nǐ yīqiè*	*jiù*	*huì*	*hǎo-qǐlái*	*de*	*ma*
warm	you all	then	will	get well	DE	PART

'Is it not that either we warm up each other or, let's say, you let me warm you up, and then everything will be all right?'
(cf. Li 2003:15)
Li (2003:15) points out that, even though this kind of meaning is different from the so-called tentative meaning, it is still located in the same broad semantic area.

[36] Note that reduplication is blocked in the cases of monomorphemic disyllabic adjectives; it is however possible in the case of backformation, i.e. when a disyllabic adjective has been reanalysed as consisting of two morphemes (cf. Paul 2010).

The discussion above clearly shows that there are different properties which help distinguishing verbs and adjectives as two separate classes; thus, adjectives cannot be considered as a subclass or a special class of verbs.

4.3.2 Stage-level adjectives and deadjectival verbs

From the previous section, it has clearly emerged that it is not the case that Chinese does not possess an adjectival class and that adjectives has to be conflated with verbs; in fact, adjectives and verbs have specific properties that help to distinguish clearly two different word classes. However, it should be noted that some predicative adjectives can be used as inchoative verbs, i.e. they are event-like (cf. Carlson 1977), as it is shown by the examples in (30).

(30)   a. 他　醉　　了
        tā　zuì　le
        he　drink　ASP
        'He got drunk'
    b. 我　胖　　了
        wǒ　pàng　le
        I　fat　ASP
        'I put on weight'
    c. 头发　　白　　了
        tóufa　bái　le
        hair　white　ASP
        'The hair whitened'
    d. 衣服　　脏　　了
        yīfu　zāng　le
        clothes　dirty　ASP
        'The clothes got dirty'

The possibility for an adjective to occur as a predicate in sentences with the marker 了 *le* is not linked to its gradability: gradable adjectives can occur as predicates in this context (cf. Zhu 1980, Sybesma 1997, among others), but not all of them, as it is shown in the examples in (31), adapted from Liu (2010:1035):

(31)   a. 天　黑　/　　亮　　了。
        tiān hēi　/　liàng　le
        sky　black　bright　ASP
        'It got dark / downed.'
    b. 花　红 /　黄　　了。
        huā　hóng / huáng　le
        flower red　yellow ASP
        'The flower got red / yellow.'

c. 水　　　　热 / 冷　了。
  shuǐ　　rè / lěng　le
  water　　hot　cold　ASP
  'The water got hot / cold.'

d. *张三　　聪明　　 / 笨　　　了。
  Zhāngsān cōngming / bèn　　le
  Zhangsan clever　　stupid　ASP
  'Zhangsan got clever / stupid.'

e. *你　的　　女儿　　　漂亮　/　丑　了。
  nǐ　de　nǚér　　piàoliang / chǒu le
  you　DE　daughter　beautiful　ugly　ASP
  'Your daugther got beautiful / ugly.'

f. *张三　　正直　/　诚实　　了。
  Zhāngsān zhèngzhí / chéngshí　le
  Zhangsan upright　　honest　　ASP
  'Zhangsan got upright / honest.'

The examples above suggest that only adjectives compatible with a change of state (inchoative) reading can occur with the marker 了 *le* (cf. Liu 2010). We will be back to this point later on.

Gu (1992) proposes that Chinese adjectives can be used either as individual level or as stage level predicates (cf. also Xiao & McEnery 2004), that is, they can either describe a change of state or ascribe to an entity properties that exists regardless of time, and thus they can be eventive.

According to Liu (2010), Chinese adjectives can be divided at least into two subtypes, depending on the situation type they describe, i.e. individual-level adjectives and stage-level adjectives[37]. For example, an adjective like 聪明 *cōngming* 'clever' is an individual-level adjective, denoting an inherent property of a person, which normally does not change over time (cf. Chen L. 2007). Differently, an adjective like 醉 *zuì* 'drunk' is a stage-level adjective, which describes a transient property: nobody will keep being drunk all the time, so it is just a property of a particular stage (cf. Chen L. 2007). Stage-level adjectives may denote either a pure state or an inchoative state; according to Liu (2010), since an inchoative state focuses on the initial sub-event

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[37] Carlson (1977) distinguishes between individual-level predicates (ILP) and stage-level predicated (SLP). ILPs involve permanent or tendentially stable properties, i.e. they describe properties of individuals; in contrast, SLPs involve transient or episodic properties, i.e. they describe properties of stages. However, it should be noted that this difference seems not to be always clear-cut. For example, adjectives indicating colours can both indicate inherent properties, like in *the snow is white* or transient properties, like in *her face was white with fear*.

(BECOME) rather than on the pure state itself, adjectives that denotes an inchoative state can be considered as (dynamic) verbs.

Xiao & McEnery (2004) consider predicative adjectives as stative verbs, and divide them into individual-level states (ILSs) and stage-level states (SLSs). According to Xiao & McEnery, ILSs (individual-level states) are stative durative verbs without any temporal or spatial endpoint and do not encode a result; they are normally predicated of permanent dispositions of an individual (e.g. 像 *xiàng* 'resemble', 诚实 'honest' *chéngshí*). These verbs have the features [−dynamic], [+durative], [−bounded], [−telic] and [−result][38]. In contrast, SLSs are durative and can be either stative or dynamic. They do not have a temporal or spatial endpoint and do not encode a result; they are predicated of less permanent stages of an individual (e.g. 病 *bìng* 'sick', 忙 *máng* 'busy'). SLS verbs have the features [±dynamic], [+durative], [−bounded], [−telic] and [−result]. Xiao & McEnery observes that when SLSs take the feature [+dynamic], their feature combination is the same as activity verbs ([±dynamic], [+durative], [−bounded], [−telic] and [−result]), i.e. they are alike to activities; in contrast, when SLSs take the feature [-dynamic], they are alike to ILSs.

In Chinese ILSs and SLSs can be distinguished by some language-specific differences (cf. Yeh 1993, Chen L. 2007). For example, perfective aspect marker 了 *le* usually selects only stage-level predicates (cf. Pan 1993)[39]; in contrast, individual-level predicates usually cannot appear with the aspect marker 了 *le*, e.g. 他像（*了）爸爸 *tā xiàng* (*le*) *bàba* 'He resembles his father' (cf. Chen L. 2007, Xiao & McEnery

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[38] In their classification of verbs, Xiao & McEnery (2004) add two other parameters to the three well-know ones, i.e. ([±dynamic], [±durative] e [±telic], cf. Comrie 1976, Smith 1997): [±result] e [±bounded]. Xiao & McEnery (2004) assign the value [+result] to a verb if its meaning includes a reference to a changing point where the spatial final point denoted by the verb starts to be valid. Both accomplishments and achievements have a spatial final point, but only achievements denote success in reaching that point (e.g. *score* (a goal)), while accomplishments do not entail success in achieving the final point (e.g. *write*). Only [+result] verbs have a telic reading, independently from the adding of arguments indicating spatial final points. The other parameter is [±bounded], which refers to the presence or absence of a temporal final endpoint. Traditionally, final points are considered as temporal notions (beginning and end of a situation). Later, some linguists began to consider final points in spatial terms (c.f. Van Voorst 1988). Tenny (1994:26) states that telicity and boundedness are "the same thing in two different domains: the spatial and the temporal": both of them are final endpoints but are applied in different domains, i.e. the temporal one and the spatial one. Therefore, according Xiao & McEnery (2004), [±bounded] refers to the presence or absence of a final spatial endpoint, while [±telic] refers to the presence or absence of a final spatial endpoint. The feature [+result] always entails [+telic], and [+telic] entails [+bounded]. Saying it differently, [-result] can mean either [+telic] or [-telic], and [-telic] can mean either [+bounded] or [-bounded].

[39] Pan (1993) assumes that 了 *le* is a selective binder and only selects an event/situation variable, so it is compatible with stage-level predicates, but not with individual-level ones.

2004)[40]. Furthermore, only SLPs can be negated either by 不 *bù* (which selects stative predicates) or 没 *méi* (which aspectually selects stage-level predicates), cf. Chen (2007)[41]. According to Yeh (1993), verbs like 饿 *è* 'hungry' have both the properties of stage-level and stative predicates: when 饿 *è* is apt to present the property of stative, it selects 不 *bù*; in contrast, when it is apt to present the property of stage-level, it selects 没 *méi* (see exx. in 32, from Chen 2007:30-31). In contrast, individual-level predicates cannot choose the negator 没 *méi* (cf. Chen 2007). The choice of the negator, then, is apparently sensitive to the same aspectual properties as 了 *le*.

(32)   a. 我　饿　　了
          wǒ　è　　le
          I　　hungry ASP
          'I got hungry.'
    b. 我　没　　饿
          wǒ　méi　　è
          I　　not　　hungry
          'I did not/do not get hungry.'
    c. 我　不　　饿。
          wǒ　bù　　è
          I　　not　　hungry
          'I am not hungry.'

Therefore, we might conclude that in Chinese some adjectives, namely stage-level adjectives, can act as inchoative verbs. Liu (2010) highlights some properties of these adjectives when used as inchoative verbs[42]. First of all, Liu observes that what follows the change of state is a pure state, which can be continued; a perfective inchoative state can be conjoined with an imperfective clause, without raising any contradiction. See the example in (33), adapted from Liu (2010:1035):

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[40] The nature and functions of the aspect marker 了 *le* is a very controversial issue, which has been the object of much discussion in the literature (cf. Chao 1968, Li & Thompson 1981, Huang 1987, Smith 1997, Dai 1997, Sybesma 1997, Xiao & McEnery 2004, among many others).

[41] Of the two negation markers in Chinese, 不 *bù* and 没 *méi* (or 没有 *méiyǒu*), 不 *bù* is used with bare verbs and modals, while 没 *méi* is used with various aspects and with accomplishment verbs (cf. Liu 2010). For an account on the selection relation between negation and verb/aspect, see Cheng, Huang & Tang (1996).

[42] Sybesma (1999) proposes that these forms should be considered as activities rather than states, as their semantics involves both dynamism and an open range. According to Sybesma (1999), Chinese has only the activity and state classes of verbs (see also Tai 1984, who claims that Chinese does not have inherently telic verbs).

(33) 水　　刚刚　　热　了，而且　　到　　现在　还　　很　　热。
shuǐ gānggāng rè le érqiě dào xiànzài hǎi hěn rè
water just-now hot ASP and up-to now still very hot
'The water got hot just now, and it is still hot now.'

Moreover, Liu (2010) highlights that in the simple adjectival predicate, the adverbial 几乎 *jīhū* 'almost' induces an event cancellation reading only[43], where 几乎 *jīhū* 'almost' takes scope over the entire event. See the example in (34), adapted from Liu (2010:1035):

(34) 张三　　　几乎　生气　　了。
Zhāngsān jīhū shēngqì le
Zhangsan almost angry ASP
'Zhangsan almost got angry.'
(Context: Lisi did something annoying and then he immediately apologized to Zhangsan, so Zhangsan didn't get angry.')

Negation as well takes scope over the entire event: when the simple adjectival predicate is negated, only the event cancellation reading is available. See the example in (35), adapted from Liu (2010:1036), which involves an inchoative reading rather than a state meaning (i.e. 'The flower is not red'):

(35) 花　　没　　红。
huā méi hóng
flower not red
'The flower did not get red.'

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[43] According to Hay, Kennedy & Levin (1999), a telic predicate modified by *almost* is ambiguous between a reading in which the described event has occurred, but has not quite been completed, and an event cancellation reading (it did not occurr at all), e.g. *Lee almost read Eugene Onegin* (cf. Dowty 1979). An atelic predicate modified by *almost* has only the latter type of reading, e.g. *Lee almost recited poetry*. Dowty (1979) observes that processes modified by *almost* only have the event cancellation reading (e.g. *she almost walked*); achievements too have only the event cancellation reading (e.g. *she almost arrived*). In contrast, accomplishments modified by *almost*, e.g. *She almost painted a picture*, are ambiguous between the event cancellation reading (she had the intention of painting a picture, but then she changed her mind) and the non-completed reading (she started painting but did not quite complete it). This is because *almost* can take scope either over the entire event or just over the process leading to the result. Finally, semelfactives (*She almost coughed*) and achievements (*She won the race*) are not ambiguous because are punctual and lacks the process part; they only have the event cancellation reading. In sum, only accomplishments have an ambiguous reading. However, Salaberry (2000:34) points out that the *almost* test fails to distinguish punctual from durative telic events. For example, with a punctual verb (achievement) like *break*, as in *Mary almost broke the stick*, two readings are possible (as in the case of accomplishments): Mary almost started to break the stick but eventually changed her mind; Mary almost succeeded in breaking the stick but she was not enough strong. According to Salaberry, the same holds for the verb *kill*; according to him, the only distinction the test makes is one of agentivity, or volitional vs. non-volitional states: only with non-volitional states (the external argument is not volitional) the test distinguishes accomplishments vs. achievements: e.g. sentences like *he almost died*, *he almost noticed the picture*, *the cable almost snapped* have only the event cancellation reading.

Furthermore, Liu (2010) highlights that while in out-of-the-blue contexts the event denoted by accomplishments (e.g. *I wrote a letter*) are normally interpreted as having culminated, Chinese deadjectival change of state predicates in analogous contexts have an inchoative as well as a present stative reading. See the example in (36), adapted from Liu (2009:27):

(36) 花   红   了。
      huā   hóng le
      flower red   ASP
      'The flower got red and is still red now.'

However, with the addition of punctual adverbials, only the inchoative reading holds, like in the example (37), adapted from Liu (2010:1036):

(37) 水   三点种   的   时候   热   了。
      shuǐ sān-diǎn-zhǒng de shíhou rè   le
      water three-o'clock   DE moment hot ASP
      'The water got hot at three o'clock.'

A further aspect which highlights the difference between stage-level adjectives in their pure stative sense and in their inchoative use is the fact that while the simple adjective can be appear with or without the grammatical morpheme 的 *de* (cf. 4.3.1), the corresponding inchoative verbal version obligatorily requires the morpheme 的 *de* that, as we have seen, is compulsory with relative clauses modifiers. See the example in (38), from Paul (2010:124):

(38) a. 胖   了 *(的) 人
         pàng le de   rén
         fat ASP DE   person
         'The person who has put on weight.'

We would like to stress the fact that, while these adjectives in their inchoative use are often found with the aspect marker 了 *le* (which is believed to coerce the stage-level adjective into an inchoative verb by some authors, e.g. Xiao & McEnery 2004), they can be found in other contexts as well (39), for example after a modal, as in the example (39a):

(39) a. 叔叔 说 两 个 星期 内 要 胖 一 公斤。
shūshu shuō liǎng ge xīngqī nèi yào pàng yī gōngjīn
uncle say two CL week in want fat one kilo
'Uncle said that he wants to put on one kilo in two weeks.'
(Google search, September 2009)

b. 碗盘 刚 干, 你 又 要 用 了。
wǎnpán gāng gān nǐ yòu yào yòng le
dishes just dry you again want use ASP
'The dishes have just dried and you want to use them again.'
(Adapted from Tham 2009:5)

In a nutshell, what emerges from the discussion above is that a specific group of adjectives, i.e. stage-level adjectives, can be used as intransitive change of state verbs. In 4.3.1, we have shown that there is evidence against the verbal nature of adjectives: adjectives form a separate class from verbs. Moreover, we have highlighted that, even though predicative adjectives can act as predicates without needing any copula, this does not mean that they have to be considered as intransitive verbs. However, apparently some predicative adjectives, i.e. stage-level adjectives, can act as dynamic verbs: not only they are able to act as stative predicates, but they can also act as change of state verbs. Note that English deadjectival verbs, as e.g. *clear*, *dry*, *widen*, *harden*, are based on stage-level adjectives and, according to L&RH (1995), this supports the claim that only externally caused verbs are found in the causative alternation: individual-level properties typically cannot be externally caused, whereas stage-level properties can.

We may suppose that stage-level adjectives in Chinese can undergo a process of conflation which forms deadjectival verbs (cf. Hale & Keyser 1993), as shown in (40), where the verb is derived by abstract incorporation of the verbal projection into the head from the complement position, subject to principles of syntactic movement.

(40)

174
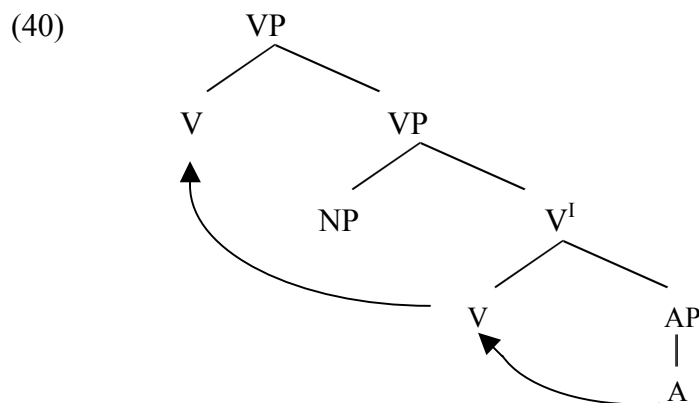
In Ramchand's (2008) system, conflation verbs arise from rhematic material (Rhemes)[44] being incorporated from the complement position into the head[45]. For example, an English verb like *clean* would be built from the adjective *clean*, which incorporates from the complement position into the head, as shown in (41) (cf. also 3.3.2).

(41)

```
                initP
              /      \
           'x'        \
                    /     \
                 init      procP
                         /      \
                      'y'        \
                              /      \
                           proc      AP
                                     △
                                   clean
```
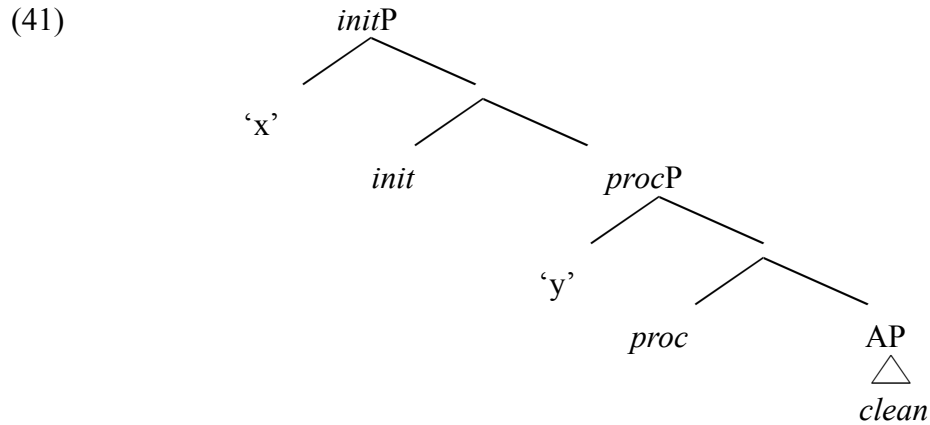
Therefore, we might consider the verbal counterpart of a Chinese adjective like 热 *rè* 'hot' (cf. ex. 31c) as built in the same way. However, since Chinese deadjectival verbs lack a transitive variant (we will see that they can have a causative variant only by adding a light or dummy V$_1$), their representation lacks the *init* layer all along (42)[46].

(42)　　a. 水　　　热　了。
　　　　　shuǐ　　*rè*　*le*
　　　　　water　　hot　ASP
　　　　　'The water got hot.'

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[44] In Ramchand's (2008) system rhemes are considered to be those elements that appear in complement position of verbs; they do not determine its own independent subevent, but act as a further modifier of the *proc* event (cf. 1.4).

[45] Ramchand (2008:93-94) points out that she assumes the same model of Hale & Keyser (1993) for conflation verbs; however her system differs in involving a more articulated decomposition and, in particular, in making a distinction between rhemes of process (which further describe the process by expressing manner or path) and rhemes of result (which further describe the final state or location). According to Ramchand, the main distinction is not between deadjectival verbs and denominal verbs, or between location verbs and manner verbs, but between conflation into the *res* head vs. conflation into the *proc* head. The main differences between Ramchand's proposal and Hale & Keyser's (1993) conflation concern denominal verbs (cf. Ramchand 2008:94-99).

[46] Note that Ramchand (2008:109) points out that deadjectival verbs tend to be unaccusative, while denominal verbs tend to be unergative. She speculates, following the line of Hale and Keyser (1993), that having a nominal feature means in some sense to having a direct internal argument and thus the pattern basically conforms to Burzio's generalization (cf. Burzio 1986), thus these verbs require an initiator.

b.

```
            procP
           /    \
水 shuǐ 'water'   \
              proc    AP
                       △
                   热 rè 'hot'
```
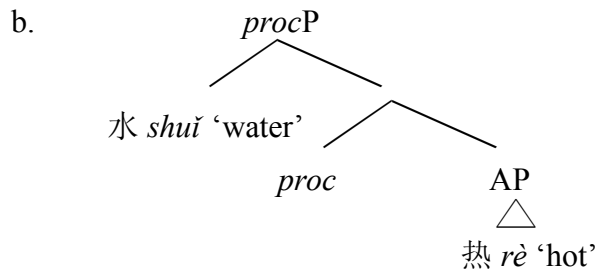
However, another possibility would be to assume that those items that can act both as adjectives and as inchoative verbs are already endowed with verbal features, which could be possible in this system, since lexical items can have different category labels and these category labels can be left unassociated (cf. 1.4); such features are listed in the lexical entry of these items along with the adjectival ones (cf. also 3.3.2). This would imply that some lexical items are specified both for adjectival and verbal features and, thus, can appear both in adjectival and in verbal syntactic contexts. Therefore, an item like 热 rè 'hot' would be specified for having [proc, A] features[47]; this would explain the properties of stage-level adjectives, which can be used both as verbs and as adjectives without overt derivational morphology. We think that this hypothesis is quite attractive and may well account for the properties of these items in Chinese (cf. 4.3.4), avoiding the problems which would arise adopting conflation. In point of fact, the presence of a bounded measure of change, which should be seen as a Path in the complement position of *proc*P (cf. 4.3.4, ex. 48), represents a problem for the conflation account, where the complement position of *proc*P is occupied by the copy of the adjective, which incorporates into the *proc*P head. Further investigation is needed in order to understand if this hypothesis is tenable and appropriate to account for the contexts in which these items are used as modifiers, since in Ramchand's framework, as we have seen, underassociation is not free but it is subject to constraints. Therefore, we must first make clear whether verbal features can be left unassociated in the different contexts where these items are used as adjectives[48]. We will leave this issue open for the moment and, for the sake of simplicity, we will talk about 'deadjectival' verbs, since these items, in a way or the other, are related to adjectives; the most important fact is that, whatever position one takes, these items can be considered as verbs, and as such, possess verbal features.

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[47] Here with "A" we generally indicate adjectival features.
[48] These problems would be avoided adopting the 'superset principle' (cf. 1.4 and chapter 3, fn. 11) without the constraints proposed by Ramchand for underassociation.

In 4.3.4 we will show that Chinese deadjectival change of state verbs, or at least a large set of them, can be included among the so-called 'degree achievement' verbs, since they can express a gradual change of state and are ambiguous between being telic or atelic. Before discussing in further details their behaviour and their characteristics, in the next section we will provide an overview on some of the main proposals in the literature on degree achievement verbs.

4.3.3 Some remarks on deadjectival degree achievement verbs

Degree achievement verbs (cf. Dowty 1979, Abusch 1986, Hay, Kennedy & Levin 1999, Kennedy & Levin 2002, Kearns 2007, Ramchand 2008) are characterized by their ability to describe a gradual change of state. According to Rothstein (2008a), while a normal achievement involves a non-extended change from α to $\neg\alpha$, a degree achievement involves a change in value on a scale (a set of points ordered along some dimension, e.g. size, length, etc., cf. Hay 1998, Kennedy & Levin 2002, Rothstein 2008a)[49]. As highlighted by Hay, Kennedy & Levin 1999, the basic semantic characteristics of degree achievement verbs is that their affected argument, as in the case of the Path object of a verb like *eat* (cf. 1.4.1.1.2), undergoes a change in some property (cf. also fn. 49). A significant part of degree achievement verbs is formed by deadjectival verbs (cf. Hay 1998, Ramchand 2008); according to Hay, Kennedy & Levin (1999), in the case of deadjectival degree achievement verbs, the change is related to the property associated with the meaning of the adjectival base.

One peculiarity of these verbs is that they display both telic and atelic behaviour according to standard diagnostics; this is the reason why L&RH (1995:172) state that, even though degree achievement verbs are verbs of change of state, nevertheless they are set apart from other verbs of change of state, since they do not necessarily entail the achievement of an endstate. According to Abusch (1986), the atelic sense of a deadjectival verb is 'become A-er', while the telic one is 'become A'. L&RH

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[49] Kennedy and Levin (2002) point out that, like degree achievements, also other kind of verbs involve changes in the degree to which an object posses a gradable property, as for example directed motion verbs (e.g. *the balloon ascended*), and creation/destruction verbs (e.g. *Kim ate rice/a bowl of rice*). Moreover, while usually achievements and accomplishments, unlike states and activities, are associated with a change of state, there is not clear consensus on whether change of state is also involved in other situations. For example, Dowty (1979) distinguishes activities from achievements (single change of state) and accomplishments (complex change of state); however, according to him, activities also involve a change of state. The difference lies in the fact that while achievements and accomplishments involve a definite change of state over time, activities involve an indefinite change of state.

(1991:129-130) and Jackendoff (1996:331) share a similar view: they consider the change of state described by these verbs as a movement along a path constituted of degrees of a property indicated by the adjectival base. According to Jackendoff (1996), if the path has a boundary, reaching the property described by the adjective, the sentence is telic; if the path is unbounded, going on indefinitely in the direction described by the adjective, the sentence is atelic. Kennedy & Levin (2002) observe that verbs of gradual change have as a part of their meaning gradable properties; telicity is not determined by a lexical diacritic, as for example [±bounded] or by some morpho-syntactic feature. According to these authors, telicity is determined solely by the semantic properties of the degree of change.

There are different views on whether this ambiguity is related to the nature of the property of the scale denoted by the adjective or not. Hay, Kennedy & Levin (1999) propose that the kind of base adjective is crucial in determining the telicity of a degree achievement verb. Following Hay (1998), they divide adjectives into two subclasses: closed-range adjectives and open-range adjectives. Closed-range adjectives are those adjectives which have a scale with a maximal value, as e.g. *full*, *empty*, *dry*: in principle, for example, it is possible to think that something is so full that cannot be fuller. In contrast, open-range adjectives are those for which is not possible to find a maximal value on the scale, e.g. *long*, *wide*, *short*. According to Hay, Kennedy & Levin (1999), the two classes can be distinguished by the acceptability of modification by certain types of adverbials, such as *completely*, which is oriented to an endpoint: *the bottle is completely empty* vs. **the gap is completely widened*[50].

Hay, Kennedy & Levin (1999) propose that degree achievement verbs derived from closed-range adjectives normally behave as telic (*The clothes are drying* does not entail *the clothes have dried*), while degree achievement verbs derived from open-range adjectives normally behave as atelic (*The snow is slowing* entails *the snow has slowed*). However, a measure phrase can provide an explicit bounded difference value (i.e. the measure of the change undergone by the affected argument with respect to the

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[50] However, Kennedy and McNally (1999:178, fn.1) point out that modifiers like *completely* and *totally* have two different uses: they can refer to an endpoint or they can be used roughly as synonyms of *very*. Kearns (2007:42) makes the following example: *I'm completely/totally uninterested in finances, and Bob is even less interested than me*, where *uninterested* does not have a maximal value. In this case, *completely* modifies an open-scale expression and is not oriented to the upper bound of a property scale. According to Kearns (2007), in these contexts, *completely* is closer in force to *unquestionably, definitely* or *indubitably* rather than being a synonym of *very*. Therefore, Kearns questions that modification with *completely* can be a good test to distinguish open and closed-range adjectives.

subject in the property introduced by the adjectival base; cf. Jackendoff 1996, Tenny 1994), and thus no quantity implicature of completeness arises, regardless of the nature of the property scale (cf. Kearns 2007); the difference between open-range properties and closed-range properties in this case does not play a role. In other words, "when the difference value identifies a bound on the measure of change in the affected argument over the course of the event, the predicate is telic" (cf. Hay, Kennedy & Levin 1999:130), as in: *Kim lengthened the rope five inches*; *they widened the road 5 m.*

Moreover, while deadjectival verbs based on closed-range adjectives, according to Hay, Kennedy & Levin (1999), have a 'completely' implicature (they assume that the most informative interpretation of a sentence like *they straightened the rope* is one in which the rope is straightened completely), this can be cancelled by adding a *for*-adverbial or an explicit denial, such as *not completely* (*I strengthened the rope, but not completely*).

Furthermore, in particular collocations and contexts, verbs derived from open-range adjectives, which are usually atelic, may be associated with closed scales and behave telically: for example, in *the tailor lengthened my pants*, real-world knowledge imposes a conventional maximal length for pants. Hay, Kennedy & Levin (1999) assume a contextual telos also for a sentence like *the soup cooled in ten minutes*; in this case, they claim that the insertion of an *in*-adverbial is possible because *the soup cooled* is more informative on a telic interpretation: the soup cooled to some bounded degree, namely room temperature. To sum up, Hay, Kennedy & Levin (1999) propose that deadjectival verbs based on open range-adjectives are atelic, unless a bounded measure phrase is added or there is a contextual telos, in which case they are telic; in contrast, deadjectival verbs based on closed-range adjectives are telic, unless an adverbial or an explicit denial is added to cancel the 'completely' implicature.

Contrary to Hay, Kennedy & Levin (1999), Kearns (2007) argues that telicity in deadjectival degree achievement verbs is not dependent on the property nature of the scale. According to Kearns (2007), there are two kinds of telic sense for deadjectival verbs: an achievement sense and an accomplishment sense. The achievement sense is related to the state 'become -er'. Kearns (2007) observes that all deadjectival verbs can express at least the change of state 'become A-er', which is entailed by all of the aspectual senses of a deadjectival verb; she terms it 'comparative endstate'. Kearns

further observes that predicates which lexically entail an endstate are usually telic, and therefore one could conclude that all deadjectival verbs are telic, since they entail a comparative endstate. Actually, Bertinetto & Squartini (1995) make the same observation; they notice that comparative endstates occur in telic predicates, as e.g. *the temperature got colder in ten minutes*, and therefore they claim that these change of state verbs, which they term 'gradual completion verbs', are always telic, since they always entail a comparative endstate. Kearns (2007) notices that a verb like *widen* used with *in*-adverbials (e.g. *the gap widened in a few minutes*) have a delay reading, a characteristic feature of the achievement class, meaning 'After a few minutes had passed the gap widened'. Moreover, when such a verb is used with a *for*-adverbial, it indicates the duration of the resultant state, e.g. *the gap widened for ten minutes* (having widened, the gap was wider for a few minutes)[51]. Therefore, Kearns (2007) concludes that deadjectival verbs, in their comparative endstate sense, are telic. If the interpretation is durative, the denoted event consists of a series of minimal change achievements and is characterized as a process.

The other telic sense of deadjectival verbs, according to Kearns (2007), is the accomplishment sense, which is related to the state 'become X'. Kearns (2007) points out that while deadjectival verbs like *widen* only have a comparative endstate, verbs like *quiet*, *cool* and *clear* have both the comparative endstate and a standard endstate, i.e. 'X is A'. When they are modified by *in*-adverbials they can have either the delay reading or an event duration reading. Therefore, a sentence like *the room quietened in a few minutes* can mean either 'the room was becoming quieter throughout a period of a few minutes, and at the end of that period the room was quiet' (accomplishment, associated to the standard endstate; event duration) or 'at the end of a few minutes the room became quieter' (achievement, associated to the comparative endstate; event delay)[52].

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[51] It should be noted that the use of *for*-adverbials is not always a diagnostics for atelicity; it can be used as a test for telicity as well, e.g. *he left the country for two months* (cf. Pustejovsky 1995).

[52] Kearns (2007) also considers another reading of the sentence *the room quietened in a few minutes*, i.e. 'At the end of a few minutes (during which the room was noisy) the room became quiet', which has the event delay reading associated with achievements, but also the standard endstate reading associated with accomplishments. According to Kearns, examples like this should be considered as accomplishments. She notices that, even though a change of state transition can be considered as a single transition to an identifiable endstate (the comparative endstate), which can count as a telos, it is not uniquely specified: a whole series of transitions to comparative endstates can be expressed by the same predicate. This repeatability of the non-unique comparative endstate underlies the process interpretation of change of state verbs, e.g. *the room quietened for a few minutes* 'throughout a period

Therefore, Kearns (2007), differently from Hay, Kennedy & Levin (1999), assumes that the telic (accomplishment) interpretation with deadjectival verbs is assigned the content 'become A' (where A is the positive form of the corresponding adjective), rather than 'completely' (giving the interpretation 'X becomes maximally A'); thus, the interpretation of the implicature is given by the standard value of the property and it is not dependent on the property nature of the scale (open-range adjectives vs. closed-range adjectives). Moreover, Kearns (2007) assumes that the strength of the implicature depends on the characteristics of the standard value (whether the standard value has a lower bound able to provide a telos for the derived verb or not). Accordingly, Kearns (2007) classifies deadjectival verbs as follows:

- Verbs like *clear, dry, empty* (derived from closed-range adjectives): the positive adjective for verbs in this group lexicalises the maximal property value, and thus the standard value 'X is A' entails 'X is maximally A'. These verbs are associated with a default accomplishment sense, but process senses are also possible[53].

- Verbs like *darken* or *quieten* (also from closed-range adjectives): the positive adjective for verbs in this group does not lexicalise the maximal property value, so that the standard endstate may not coincide with the maximal value for *dark*. These verbs take both process and accomplishment senses freely.

- Verbs like *cool* (from open-range adjectives): they have accomplishment senses which entail the standard endstate. According to Kearns (2007), there is no need to propose contextual endpoints which are implicitly identified as having a contextually determined upper bound to the property scale, as for example room temperature in the case of *cool* (cf. Hay, Kennedy & Levin 1999).

- Verbs like *widen* (also based on open-range adjectives): an adjective like *wide* denotes a standard value with a lower bound which is partly inaccessible to modification; the standard value for adjectives like *wide* and *deep* is insufficiently determined (undetermined lower bound), and thus the

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of a few minutes the room progressively became quieter and quieter'. In contrast, change of state accomplishments are characterized as a process of iterated 'become A-er' transitions with a necessary endpoint, which stops the process. According to Kearns (2007), this endpoint is 'become A', i.e. the standard endpoint, which is unique and non-repeatable, providing the telos. Accomplishments, thus, are characterized by a unique endstate.

[53] Kearns (2007:64) observes that all deadjectival verbs can have a process sense, which consists of iterated achievement-like, 'become A-er', transitions with a durational adverb.

satisfactory telos for an accomplishment reading is not identifiable. This correlates with the lack of an accomplishment sense for these verbs (cf. *the gap widened in ten minutes but it is still narrow*; *#the gap is half-wide/completely wide*, Kearns 2007:54), which only have a process sense.

To sum up, Kearns (2007) argues that, while a telic (achievement) sense and a process sense are always available for degree achievement verbs, the telic (accomplishment) sense depends on the characteristics of the standard value, rather than on the kind of scale of the adjectives (vs. Hay, Kennedy & Levin 1999). Accordingly, the telic (accomplishment) sense is the strong default reading where 'X is A' entails 'X is maximally A', i.e. X bears the maximal possible degree of the relevant property; thus deadjectival verbs like *empty* or *dry* have a default accomplishment sense. In contrast, at the other extreme, deadjectival verbs based on open-range adjectives that denote a standard value with a lower bound which is partly inaccessible to modification cannot have an accomplishment telic sense.

As Kearns (2007), Rothstein (2008a) too observes that degree achievements verbs can have three readings, i.e. the achievement, accomplishment and the activity one. First of all, Rothstein observes that these verbs have the properties of achievements since: 1) they denote instantaneous changes, e.g. *in an instant, the sky brightened* (cf. also Rothstein 2004:189); 2) when modified by an *in*-adverbial (telic modifier), the modifier locates the change in time and does not entail that the change took place gradually in that period of time, e.g. *the sky brightened in half an hour* (at the end of half an hour) (cf. Rothstein 2008:16). Nevertheless, Rothstein (2007:190) also observes that, beside the achievement reading, degree achievement verbs may denote extended events; in this case they are ambiguous between an activity and accomplishment reading, depending on whether the sentence is understood as expressing an event which has reached a particular point or not (cf. Abusch 1986). Therefore, in a sentence like *the sky was darkening*, *dark* can mean either 'become dark' or 'become darker'. According to Rothstein, this ambiguity is confirmed by conflicting entailments arising from the imperfective paradox: if *dark* means 'become dark', then *the sky was darkening* does not entail *the sky darkened*; in contrast, if *dark* is interpreted as 'become darker', then *the sky was darkening* entails *the sky darkened*. Moreover, Rothstein further points out that, when a degree achievement verb denotes an extended event, it can be modified either by *in*-adverbials (telic modifiers) or by

for-adverbials (atelic modifiers): e.g. *the sky darkened for hours* vs. *the sky darkened in an hour*.

Given the three possible readings, Rothstein (2008a) tries to explain how these readings are derived. Rothstein (2008a:191) observes that degree achievements are very often derived from adjectives, which are analysed as denoting functions from individuals to values on a specified scale; thus, for example, *the soup is cool* entails that the soup has a value on the temperature scale below a certain value. According to Rothstein, the verb *cool*, in the same way as the corresponding adjective, relates an object to a value on a scale and also involves some comparison; moreover, as a verb, *cool* denotes the set of events in which an object at the end of the event is assigned a lower value on the temperature scale than the one it had at the beginning of the event. In her analysis of degree achievements, Rothstein decides to assign only one value to these verbs, i.e. that of 'become A-er' (e.g. 'become cooler'), since it constrains the value of an object X on the temperature scale at the end of the event only in relation to its value at the beginning of the event, and not in absolute terms. Therefore, Rothstein (2008a) disagrees with those theories which consider these verbs ambiguous (see the discussion above), depending on whether they are assigned the value 'become A-er' or 'become A'. According to Rothstein, the meaning of a sentence like *the soup cooled* specifies the direction of the change of value along the scale denoted by *cool*, but it does not give any constraint on the absolute properties of the final value. Rothstein points out that, in support of this analysis, there is the fact that *cool* (verb) does not mean the same as *become cool*: *cool* does not specify the final value, but rather specifies the direction of the change (its meaning is 'undergo a decrease in temperature'), and thus it entails a change in a particular direction (cf. L&RH 1995:172). In contrast, *become cool* specifies the final value but does not constrain the direction of the change; its meaning is 'get to have a temperature value in the (contextually determined) cool range'. To illustrate this point, Rothstein (2008a:192) provides the following example: *when I took the soup out of the fridge it was so cold that it burned my mouth, but after some time at room temperature, it had become pleasantly cool/*it had cooled*. How does Rothstein (2008a) account for the properties of degree achievement verbs then? A deadjectival verb like *cool* is a degree achievement, i.e. it denotes a set of instantaneous changes; the change is from a situation in which an object is assigned a value X on the cool scale to a situation in which the same object is assigned a value lower than X. The verb *cool*, then, consists

of a set of minimal non-extended changes, where there is no other interval between the minimal initial interval and the minimal final interval. Therefore, a verb like *cool* has the properties of achievements singled out by Rothstein (2008a:178-179): they denote an event of change; this change is an instantaneous (non-extended) change. However, differently from normal achievements, a degree achievement denotes a change in values on a scale. It is important to stress the fact that the endpoint of one event of change (e) can be seen as the starting point of another event of change (e^1), where e and e^1 temporally overlap. Therefore, the conditions of S-summing[54] are met. Accordingly, the process reading is derived from an achievement via S-summing (in a similar way as the process reading of semalfactives, cf. Rothstein 2008a and 1.4.1.2.1) and should be seen as a series of changes of degree along a scale. What about the accomplishment reading? According to Rothstein (2008a:194), there is no need to argue that degree achievement verbs are also accomplishments, even when they seem to convey the meaning of 'become A' and to have a culmination point. Rothstein argues that the accomplishment reading is determined contextually or via extent modification: for example a sentence like *has the soup cooled yet?* entails a contextually determined extent, while the degree modifier in *the soup cooled three degrees* provided an explicit extent to the activity event, yielding to telicity. Therefore, according to Rothstein (2008a), degree achievement verbs are basically telic (achievement) verbs; however they can also behave atelically, as processes derived from achievements via the S-summing operation. The accomplishment reading is derived only contextually or via extent modification.

What clearly emerges from the different positions found in the literature on the topic is that degree achievement verbs, despite being change of state verbs, are not obligatorily telic; thus, not all inchoative verbs are necessarily telic (cf. Piñón 1997, Marín & McNally 2009). The ambiguity of these verbs, showing both telic and atelic behaviour, has been widely recognised in the literature; the differences among

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[54] S-summing (cf. Rothstein 2004, 2008a, 2008b) is an operation that joins individual events to form a larger one. This operation takes events in the denotation of a verbal predicate, such as *run*, which temporally overlap, and sums them into a single more extended event also in the denotation of the same verb *run* (cf. Rothstein 2008b:46). S-sum applies to events that stand in the appropriate relation, i.e. they must be temporally overlapping: the start point and the final point are identical. S-cumulativity normally applies to activities and states but not to accomplishment and achievements. Therefore, in the case of degree achievement verbs, single changes of states can be S-summed seamlessly to form a derived process.

proposals concern the kinds of telic senses associated to degree achievement verbs and, also, what determines the different behaviours.

Ramchand (2008:89-91) proposes an account of these verbs taking into considerations different aspects of the various proposals made in the literature. Ramchand starts from the observation of three of the main characteristics traditionally attributed to degree achievement verbs: 1) they are ambiguous between a telic and an atelic reading; 2) they are usually alternating in transitivity; 3) they are often deadjectival. Ramchand, drawing on Hale, Kennedy & Levin's (1999) work, proposes that degree achievement verbs are a special kind of process verbs where the degree of verbal change is mapped onto a property scale of some sort, related to the meaning of the adjectival base; therefore, these verbs can be considered as normal [proc] verbs with a single Undergoer role, as shown in the example in (43). Note that, differently from Hale, Kennedy & Levin (1999), Ramchand does not distinguish between deadjectival verbs based on open-range adjectives and those based on closed-range adjectives; accordingly, all deadjectival verbs are considered to be basically processes.

(43)   a. *The cocoa beans dried in the sun for two hours*.

   b.
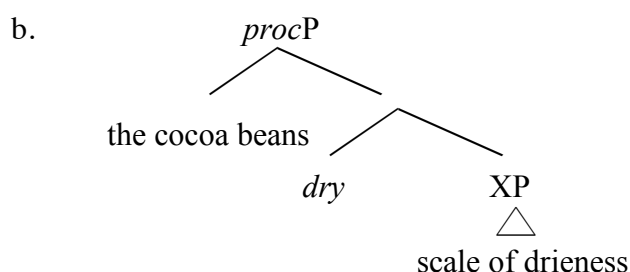
Moreover, following Hay, Kennedy & Levin's (1999) proposal for degree-achievement verbs based on open-range adjectives, Ramchand assumes that the fact that they can behave telically is due to a contextual effect[55], and it does not involve that their lexical entry is specified for a [res] (result, cf. 1.4) feature. She also assumes that the complement position of degree achievement verbs is filled implicitly by the property scale denoted by the corresponding adjective (43); if the property scale is

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[55]Note that, in English, a bounded Path complement gives rise to a bounded event with verbs of motion too (as well as quantized DP Path objects give rise to bounded events with creation/consumption verbs; cf. 1.4.1.1.2). For example, a motion verb like *dance* ([init, proc]) with a bounded PathP gives rise to a goal of motion reading, as in *Mary danced to the store* (cf. Ramchand 2008:111).

contextually bounded, then the verb is telic, as in *my hair dried in just ten minutes in that weather* (cf. Ramchand 2008:90) [56].

However, Ramchand also considers that, along with the telic reading derived form a bounded path, a telic punctual reading is possible too (cf. Rothstein 2004, 2008a; Kearns 2007), e.g. *the gap widened* (*suddenly*) (Ramchand 2008:91). This punctual reading, according to Ramchand, can be obtained only from the verb identifying the result projection head too. Actually, Ramchand assumes that degree achievement verbs, like semelfactives (cf. 1.4.1.2.1), are ambiguous between being [proc] and [proc, res] verbs (on the connection between semelfactives and degree achievement verbs, cf. Rothstein 2004, 2008a, Ramchand 2008:91; see also the discussion above). Therefore, degree achievement verbs can be either telic or atelic; in their atelic reading they are normal [proc] verbs. Telicity can arise when the adjectival path is bounded or when the verb identifies the *res* head; degree achievement verbs, thus, have two telic senses, which basically correspond to Kearn's (2007) accomplishment and achievement readings.

In the next section we will deal with the issue of Chinese deadjectival degree-achievement verbs.

4.3.4 Chinese deadjectival degree achievemenent verbs

In 4.3.2, we have seen that Liu (2010) points out that adjectives that denote an inchoative state can be considered as (dynamic) verbs. Moreover, Xiao & McEnery (2004) assume in their system that SLS verbs have the features [±dynamic], [+durative], [–bounded], [–telic] and [–result]; when they have a positive value for the [±dynamic] feature, they are specified for the same features as activities, i.e. [+dynamic], [+durative], [–bounded], [–telic] and [–result]. Therefore, these verbs, despite expressing a change of state, seem to be characterized as processes and, thus, do not have an endpoint specified in their lexical entry; actually, they should be classified as degree achievement verbs.

The fact that Chinese deadjectival verbs can be considered as degree achievement verbs seems to be corroborated by their compatibility with certain aspect markers.

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[56] Ramchand (2008:90) notes that "this behaviour is predicted by the homomorphic unity proposal for rhematic complements, if we assume that the complement of the degree achievement is actually an implicit property scale.".

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For example, they can occur with the progressive aspect marker 在 *zài*, which is usually found with activities (cf. Xiao & McEnery 2004). Accomplishments can appear with the progressive aspect marker as well, even though not frequently: an accomplishment cannot occur with the progressive marker when it takes a direct bounded object (Path), which makes the predicate telic. Finally, achievements cannot occur with the progressive marker, since they specify a spatial endpoint. The stage property of the progressive aspect marker makes it incompatible with endpoints; given the dynamicity of the progressive viewpoint, the aspect marker 在 *zài* conflicts with stative predicates, because truly stative situations, like ILSs, do not have successive stages. In contrast, the progressive marker is compatible with SLSs. See the examples in (44)[57]:

(44) a. 那　　首　　胖　　了　　　的　　小　诗　还　　在　　　胖　　　着 /　我
　　　　nà　shŏu　pàng　le　　de　　xiăo shī　hái　zài　　pàng　zhe　wŏ
　　　　that CL　　fat　　ASP　　DE　　small poem still　ASP　　fat　　ASP　　I
　　　　担心　它 一直　　　　胖　下去 / 会　胖成　　　　巍峨　　的 山岳
　　　　dānxīn tā yīzhí　　　pàng xiàqù　huì　pàng-chéng　wēi'é　de shānyuè
　　　　worry it continously fat　ASP　　will fat-become majestic DE lofty mountain
　　　　'That small poem which fattened is still fattening / I worry it will continously go on fattening / it will become as fat as a majestic lofty mountain.'[58]
　　　　(From 两首小诗 *Two little poems* by 王宜振 Wang Yizhen)
　　b. 事实上　　　我　　也　　是　　天天　　在　　瘦　　着
　　　　shìshíshàng wŏ　　yě　　shì　tiāntiān　zài　shòu　zhe
　　　　actually　　　I　　too be　every day ASP thin　　ASP
　　　　'Actually, I am getting thinner every day as well.'
　　　　(Google search, September 2009)
　　c. 雪　一直　　　　在　下　着，地　一直　　　　在　白　　　着
　　　　xuĕ　yīzhí　　　zài　xià zhe　dì　yīzhí　　　zài　bái　　zhe
　　　　snow continously ASP　fall ASP　soil continously　ASP　　white　ASP
　　　　'The snow is continously falling down, the soil is continously whitening.'
　　　　(Google search, September 2009)

In all the sentences in (44), the deadjectival verb also takes the durative aspect marker 着 *zhe*, which indicates the durative nature of the situation (cf. Xiao &

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[57] Actually, in these examples there is a complex viewpoint 在 *zài*...着 *zhe*; see the discussion below.

[58] Notice that, according to Xiao & McEnery (2004), 胖 *pàng* 'fat' is an ILSs. We do not agree that it refers to relative stable properties of an individual and, actually, its behaviour seems to be in contrast with that of ILSs. However, it is true that the distinction between ILSs and SLSs is sometimes subject to arbitrary judgment and this can generate disagreement on some items (cf. fn. 37).

McEnery 2004)[59]. Smith (1997) points out that the durative aspect marker 着 *zhe* cannot be used with ILSs, e.g. *他聪明着 *tā cōngming zhe* 'he clever ASP'. However, Xiao & McEnery (2004) highlight that with some ILSs the aspect marker 着 *zhe* can be found, as for example 活着 *huó zhe* 'live ASP', 以为着 *yǐwéi zhe* 'mean ASP', even though they stress the fact that usually 着 *zhe* is not found with ILSs describing properties.

In contrast, Xiao & McEnery (2004) point out that SLSs are compatible with the aspect marker 着 *zhe*, which signals continuance, e.g. 低着 *dī zhe* 'low ASP'. See the examples in (45), from the PKU corpus:

(45) a. 我   做   了   柠檬水，   在   冰箱   里   凉   着   呢
         wǒ   zuò   le   níngméngshuǐ zài bīngxiāng lǐ   liáng zhe ne
         I   make ASP lemonade   in   fridge   inside cool ASP PART
         'I made the lemonade, it is cold in the fridge'

     b. 天气   还是   热 着，蚊群   在   窗   外   柳树
        tiānqì háishì rè zhe wénqún   zài chuāng wài liǔshù
        weather still   hot ASP mosquito-swarm in window outside willow tree
        上   嗡嗡地   叫。
        shàng wēngwēng-de jiào.
        on   buzz-buzz-ADV cry
        'The weather is still hot, on the willow tree out of the window the mosquitos swarm are buzzing.'

The durative aspect marker is also compatible with activities, while it is strictly incompatible with achievements, for different reasons (cf. Xiao & McEnery 2004); among the reasons, there are the following ones: the encoding of a result makes a situation complete and perfective and thus incompatible with the aspect marker 着 *zhe*, which is imperfective in nature. Moreover, even though it may take a while to achieve the result, achievements are typically instantaneous and this is incompatible with the durative nature of the aspect marker 着 *zhe*. As far as accomplishments are concerned, Xiao & McEnery (2004) claim that, since accomplishments have a natural final spatial endpoint[60], they are rarely found with the durative aspect marker 着 *zhe*. However, they highlight that, when an accomplishment takes 着 *zhe*, it co-occurs with

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[59] This aspect marker has been widely studied, and in the literature there is controversy over the aspectual meaning conveyed by it. For different positions on the topic, see Chao (1968), Comrie (1976), Li & Thompson (1981), Dai (1997), Smith (1997), Smith 1997, Yeh (1993), Pan (1998), among others.

[60] In their system accomplishments are [+dynamic], [+durative], [+bounded], [+telic] and [–result] vs. achievements, which are [+dynamic], [-durative], [+bounded], [+telic] and [+result] (cf. fn.38).

the progressive marker 在 *zài*, forming a complex viewpoint which signals "a continuation of a progressive activity" (Zhang 1995:137), as in the examples in (44). The occurrence of deadjectival verbs, like those presented in (44), with the complex viewpoint 在 *zài*...着 *zhe* further confirms that these verbs act like degree achievement verbs.

Furthermore, these deadjectival verbs can occur with the aspect marker 下去 *xiàqù*, which is a continuative aspect marker (cf. Chao 1968, Dai 1997, Kang 1999, Xiao & McEnery 2004)[61], meaning 'to continue, go on', as in the examples in (46).

(46) a. 水　　在　　凉　　下去，但　　他　　一点　也　　不　　觉察。
　　　　shuǐ zài liáng xiàqù dàn tā yīdiǎn yě bù juéchá
　　　　water ASP cool ASP but he a bit too not perceive
　　　　'The water is going on cooling, but he cannot perceive it at all.'
　　　　(From the PKU corpus)

　　　b. 如果　　这　　个　　人　　再　　胖　　下去　怎么办？
　　　　rúguǒ zhè ge rén zài pàng xiàqù zěnme-bàn
　　　　if this CL person again fat ASP what's to be done
　　　　'If this person continues putting on weight, what's to be done?'
　　　　(From the PKU corpus)

　　　c. 最好　能　继续　瘦　下去，一直　　　瘦　　到　　在
　　　　zuìhǎo néng jìxù shòu xiàqu yīzhí shòu dào zài
　　　　best can continue thin ASP continuously thin until at
　　　　躺倒　　病床　　上　　爬不起来。
　　　　tǎngdǎo bìngchuáng shàng pá-bù-qǐlai
　　　　lie down hospital bed on climb-not-get up
　　　　'It would be better to go on slimming, to slim continuously until not being able to get up from the hospital bed.'
　　　　(From 人民日報 *Renmin ribao* 'People's Daily', 11/04/2002, available at: http://people.com.cn/BIG5/shenghuo/77/121/20020411/706861.html)

　　　d. 天　　黑　　下来，阳光　　逐渐　　红　　下去。
　　　　tiān hēi xiàlai yángguāng zhújiàn hóng xiàqù.
　　　　sky dark ASP[62] sunlight gradually red ASP
　　　　'The sky is starting to darken, the sunlight is gradually reddening.'
　　　　(From the PKU corpus)

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[61] Xiao & McEnery (2004:227-228) stress that 下去 *xiàqù* is not a fully-fledged aspect marker; in fact, its lexical meaning is spatially defined, i.e. 'fall / descend-go'. In Modern Chinese it can function either as a main verb or as a resultative verb indicating spatial direction or resultativeness. However, according to Xiao & McEnery (2004), it denotes the continuative meaning much more frequently than its other meanings.

[62] 下来 *xiàlai* can be considered as another not fully-fledged aspect marker, like 下去 *xiàqù* seen above. Its lexical meaning is 'come down', and it can be used as a resultative element as well, but it can also be "used after an adjective to express that a state/condition has started to arise and will continue to develop" (用在形容词后，表示某种状态开始出现并会继续发展; cf. Lü 1980, XHGC 2004). Moreover, after a verb it can also express that an action goes on from the past to the present (表示动作从过去继续到现在; cf. Lü 1980).

The continuative aspect marker is incompatible with ILSs, e.g. *聪明下去 *cōngming xiàqù* 'clever ASP', *知道下去 *zhīdao xiàqù* 'know ASP'. In contrast, 下去 *xiàqù* is often found with SLSs, in particular with adjectival verbs (quality verbs), which describe stages of an individual, as in the examples in (46). Moreover, Kang (1999) further highlights that, when 下去 *xiàqù* is used with adjectival verbs, it has an intensifying function (in line with adverbs of manner, cf. 46d) along with the continuation one (cf. Xiao & McEnery 2004), as in the examples in (47), adapted from Xiao & McEnery (2004:230).

(47)　a. 看来　　　天气　还　会　冷　下去
　　　　　kànlái　tiānqì　hái　huì　lěng　xiàqù
　　　　　it seems　weather　even　will　cold　ASP
　　　　　'It seems that the weather will get even colder'
　　　b. 天色　　　渐渐　　暗　下去
　　　　　tiānsè　jiànjiàn　àn　xiàqù
　　　　　sky　　　gradually　dark　ASP
　　　　　'The sky gradually darkened'

Xiao & McEnery (2004) point out that the use of the continuative aspect marker 下去 *xiàqù* is most natural with activities. It can also be found with accomplishments, but it does not provide information as to whether their final spatial endpoints are achieved, since 下去 *xiàqù* does not take any kind of final endpoint into its focus, like all other imperfectives (Xiao & McEnery 2004:232). Achievements, being [-durative] and [+result], are strictly incompatible with the continuative aspect marker 下去 *xiàqù*, which occurs with situations that are open-ended.

Even though deadjectival verbs seem to be basically atelic, if the path is bounded, either contextually or by means of explicit bounded measures of change[63], the telic reading arises. See the examples in (48):

(48)　a. 我　胖　了　三　　公斤　（但是　还是　很　瘦）
　　　　　wǒ　pàng　le　sān　gōngjīn　dànshì　háishì　hěn　shòu
　　　　　I　fat　ASP　three　kilo　　but　still　very　thin
　　　　　'I put on three kilos (but I am still thin)'
　　　b. 路面　　　宽　了　一　米　左右（但是　还是　很　　窄）
　　　　　lùmiàn　kuān　le　yī　mǐ　zuǒyòu　dànshì　háishì　hěn　zhǎi
　　　　　road surface　wide　ASP　one　meter　around　but　still　very　narrow
　　　　　'The road surface widened about one meter (but it is still narrow)'

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[63] We assume that the bounded measure of change is a path in the complement position of *proc*P.

c. 水　　　三点种　　　的　时候　　热　了。
shuǐ　*sān-diǎn-zhǒng*　*de*　*shíhou*　*rè*　*le*
water　three-o'clock　DE　moment　hot　ASP
'The water got hot at three o'clock.'
(From Liu 2010:1036; cf. ex. 37)

d. 天气　　　冷　　了，洗出来　　　　的　衣服　不　　快
tiānqì　*lěng*　*le*　*xǐ-chūlái*　*de*　*yīfu*　*bù*　*kuài*
weather　cold　ASP　wash-come out　DE　clothes　not　quick
干，　直　　　　等到　　　后半晌　　才　　　干　了 [...]
gān　*zhí*　*děngdào*　*hòubànshǎng*　*cái*　*gān*　*le*
dry　straight/just　wait until　afternoon　only then　dry　ASP
'The weather was cold, the washed clothes did not dry quickly, only in the afternoon they dried.'
(From the PKU corpus)

From the discussion above, we can conclude that Chinese deadjectival verbs, despite expressing a change of state, are not inherently telic and thus they can be considered as degree achievement verbs. Therefore, following Ramchand's (2008) representation for degree achievement verbs, we assume that Chinese deadjectival verbs are [proc] verbs with an Undergoer as their argument, as shown in (49).

(49)　a. 天气　　　凉　　了
tiānqì　*liáng*　*le*
weather　cool　ASP
'The weather cooled'

　　　b.
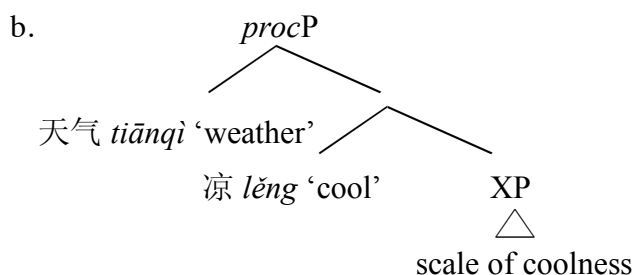
Their telic reading arises when the path is bounded. However, as in the case of the English deadjectival degree achievement verbs discussed in the previous section, Chinese deadjectival verbs too have a punctual telic reading; thus they have two different kind of telic readings. See the examples in (50):

(50)　a. 小玉　　　的　脸　突然　　　红　了
Xiǎo Yù　*de*　*liǎn*　*tūrán*　*hóng*　*le*
Xiao Yu　ASP　face　suddenly　red　ASP
'Xiao Yu face suddenly reddened'
(From PKU corpus)

b. 天气　　　突然　　　凉　　　了
　 tiānqì　　*tūrán*　　*liáng*[64] *le*
　 weather　　suddenly　cool　ASP
　 'The weather suddenly cooled'
　 (Google search, September 2009)

c. 屋子　　　里　　一下子　　　黑　　　了
　 wūzi　　*lǐ*　*yīxiàzi*　　*hēi*　*le*
　 room　　inside　all of a sudden　dark　ASP
　 'All of a sudden, the room darkened'
　 (From PKU corpus)

Therefore, following Ramchand (2008), we assume that deadjectival degree achievement verbs are ambiguous between being [proc] and [proc, res] verbs.

Ramchand (2008) observes that, more often than not, degree achievement verbs have a transitive version. Ramchand assumes that this is due to the fact that they are [proc] verbs (and thus they are not specified for the [init] feature) and, thus, are input to structure-building processes that create causative verbs (cf. 2.4.2): transitive verbs can be formed from [proc] verbs as a result of automatic structure building. In English, as we have seen, this process is possible due to the presence of a null lexical item, with semantics of general causation, which enables to build an extra-layer on top of [proc] verbs. Alternating verbs in English are typically labile verbs, where there is no formal distinction between the transitive and the intransitive variant. In contrast, as we will see, Chinese has a few labile verbs and causativization is often realized by means of complex verbs. In what follows we will see that verbs without an [init] feature in Chinese can undergo a process of causativization by adding a light or dummy V_1, which, we assume, has the same role as the null causative head in English, building an extra-layer on top of verbs not specified for the [init] feature in their lexical entry. The fact that the causative head is often spelled out in Chinese, and thus the causative variant is structurally marked, makes clear that in the causative alternation the direction of the derivation is from inchoative to causative: the intransitive version is basic, whereas the transitive one is derived (cf. the discussion in 2.4.2).

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[64] 凉 *liáng* 'cool' has a causative version formed by tonal contrast, i.e. 凉 *liàng* 'cool (tr.)/make cool'.

4.4 Lexical causatives

As we have seen in chapter 3, Old Chinese made wide use of morphological and lexical causatives. In contrast, Modern Chinese has just few relics of causatives formed by tonal contrast, e.g. 凉 *liáng* 'cool' / 凉 *liàng* 'make cool' (cf. fn. 64), and few lexical causatives, more precisely labile verbs. In Modern Chinese, causativity is mainly expressed either by periphrastic means or by complex verbs. Usually [proc] verbs cannot be used transitively, and thus they are not labile verbs, as it is shown in the examples in (51)[65].

(51) a. *我 破 了 窗玻璃
   wǒ pò le chuāngbōlí
   I break ASP windowpane
   'I broke the windowpane'[66]
  b. *他 断 了 树枝
   tā duàn le shùzhī
   he break ASP branch
   'He broke the branches'

  c. *他 干净 了 桌子
   tā gānjìng le zhuōzi
   he clear ASP table
   'He cleared the table'
  d. *他门 宽 了 路面
   tāmén kuān le lùmiàn
   they wide ASP road surface
   'They widened the road surface'

In order to turn these verbs into causatives, a complex verb is generally needed: these complex verbs can be either resultative compounds or verbs formed with a light V₁, as we will see in the next chapters (e.g. 弄断 *nòngduàn* 'make-break', 打破 *dǎpò* 'hit-break', 弄干净 *nòng gānjìng* 'make-clear', 加宽 *jiākuān* 'increase-wide').

However, some labile verbs do exist in Mandarin Chinese, as can be seen in (52):

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[65] It should be noted that many of these items could be used as transitive verbs in Old Chinese, while in Modern Chinese they can only be used as intransitive verbs (c.f. Mei 1989). For example, Xu (2006:174-188) points out that 破 *pò* 'break' was a transitive verb in Old Chinese, but it gradually lost its transitive use and, according to her, eventually also changed into a pseudo-adjectival form ('broken'). This hypothesis seems to be confirmed by the fact that in Mandarin Chinese it is possible to say 破鞋 *pò xié* 'worn-out shoes' along with 破了的鞋 *pò le de xié* 'break/worn ASP DE shoe = wore shoes'.

[66] Lin (2001:33-34) shows that 破 *pò* 'break' can never be used as a transitive verb irrespective of the kind of subject (agent, instrument, natural force): *老张 ／ 木头 ／ 台风破窗子 *Lǎo Zhāng* ／ *mùtou* ／ *táifēng pò chuāngzǐ* 'Lao Zhang / Wood / Typhoon broke the window'.

(52) a. 船　　沉　　了
       chuán chén le
       boat sink ASP
       'The boat sank'

   b. 他们　　　沉　　了　　我　　的　　船
      tāmen   chén   le   wǒ   de   chuán
      they   sink   ASP   I   DE   boat
      'They sank my boat'
      (From the Nciku dictionary:
      http://www.nciku.com/search/all/examples/%E6%B2%89)

   c. 门　开　　了
      mén kāi   le
      door open ASP
      'The door opened'

   d. 我　开　　了　　门
      wǒ kāi   le   mén
      I   open ASP   door
      'I opened the door'

   e. 我　累　　了
      wǒ lèi   le
      I   tired ASP
      'I got tired'

   f. 孩子 身体 弱，　别　　累 着 他。
      háizi shēntǐ ruò,   bié   lèi zhe tā
      child health weak don't tire ASP he
      'The child is weak, don't tire him out.'
      (From the Nciku dictionary:
      http://www.nciku.com/search/zh/detail/%E7%B4%AF/1309229)

It might be thought that in Mandarin Chinese, as in the case of English (cf. 2.4.2) and of Old Chinese (cf. 3.3.2), there is a process which builds lexical causatives from verbs that do not have an [init] feature in their lexical entry, due to the presence of a null lexical item in the language. The null lexical item is an *init* head, with semantics of general causation, which builds an extra-layer on top of the structure of the intransitive verb, as illustrated in (53), representing (52a) and (52b) respectively.

(53) a.

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b.

```
                    initP
                   /    \
  他们 tāmen 'they'      \
                  ∅       procP
                         /    \
          船 chuán 'boat'       \
                      沉 chén 'sink'   resP
                                      /    \
                      <船 chuán 'boat'>      \
                                   <沉 chén 'sink'>   XP
```
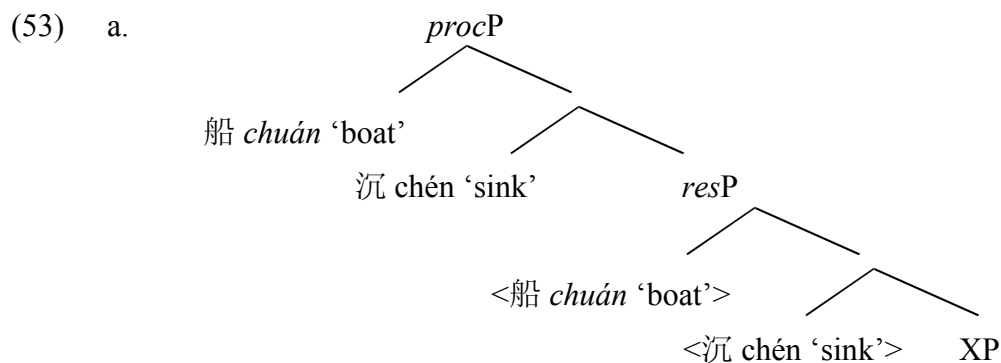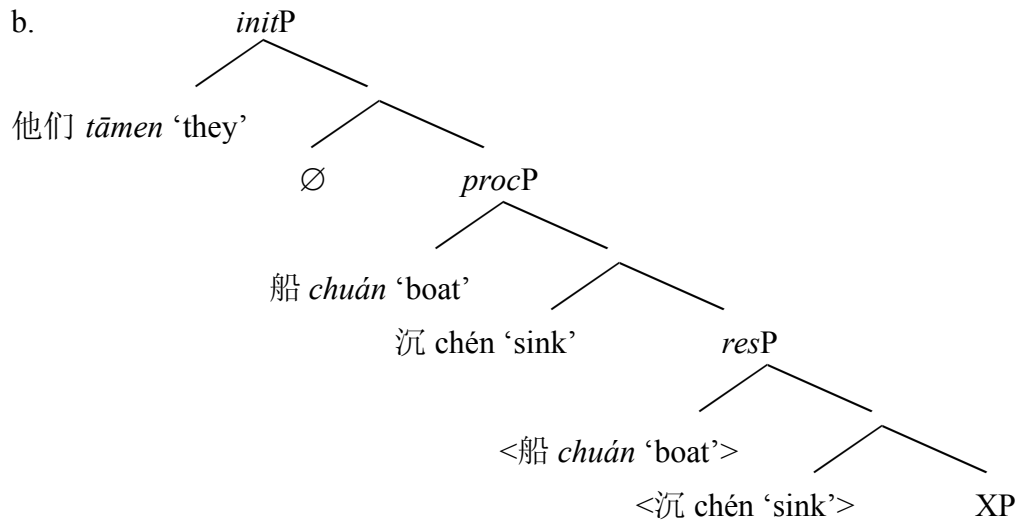
However, we have pointed out that Mandarin Chinese has very few labile verbs, and thus this would not be a regular and transparent process as in English. Moreover, Chen J. (2008) remarks that even when the lexical causative for a verb is available, the compound form is generally preferred for the transitive version. It can be supposed that the causative use of these verbs is a residual of previous stages of the language and that it is gradually fading. This hypothesis seems to be supported by the behaviour of some of these labile verbs with the aspect marker 被 *bèi*. As we have seen in 2.4.2, the passive form of a verb disables the argument corresponding to the Agent θ-role, but it is not eliminated and still assigns the role in the semantics (cf. Reinhart & Siloni 2005); thus verbs without an [init] feature should be excluded from passive formations. The verbs in (54a-c) are [proc] verbs which cannot be used causatively (i.e. they are not labile verbs), and thus lack the *init* layer altogether; therefore, they should not be able to take the passive marker, as native speakers' judgments seem to confirm. In contrast, the complex verbs in (54 a^i-c^i) can take the passive marker, since they have an [init] feature.

(54) a. *窗玻璃　　被　破　了
         chuāngbōlí   bèi   pò   le
         windowpane   PASS   break   ASP
         'The windowpane was broken'
                        vs.

aⁱ. 窗玻璃　　　被　打破　/　提破　　　了
    chuāngbōlí bèi dǎpò tǐpò le
    windowpane PASS hit[67]-break kick-break ASP
    'The windowpane was broken / was kicked and as a result broke'

b. *路面　　　　被　　宽　了
    lùmiàn bèi kuān le
    road surface PASS wide ASP
    'The road surface was widened'

               vs.

bⁱ. 路面　　　　被　　加宽　　　　了
    lùmiàn bèi jiākuān le
    road surface PASS increase-wide ASP
    'The road surface was widened'

c. *玻璃门　　被　　碎　　　　　　了
    bōlímén bèi suì le
    glass door PASS smash to pieces ASP
    'The glass door was smashed into pieces'

               vs.

cⁱ. 玻璃门　　被　　踢碎　　　　　　了
    bōlímén bèi tīsuì le
    glass door PASS kick-smash to pieces ASP
    'The glass door was kicked and smashed into pieces'

Causative verbs, like those in (54 aⁱ-cⁱ), should always allow the passive marker 被 *bèi*; thus labile verbs in (52), like 开 *kāi* 'open' and 沉 chén 'sink', having both an inchoative and a causative use, should be able to appear with the passive marker 被 *bèi*. However, if we consider the verb 开 *kāi* 'open', this does not seem to be completely true. All the native speakers I asked accepted the passive sentence in (55a), where the passive marker is followed by the verb 打开 *dǎkāi* 'open'; in contrast, some speakers did not accept the sentence in (55b), with the passive marker followed by the verb 开 *kāi* 'open'[68].

(55)　a. 门　被　　打开　了　*vs.*　b.?门　被　　开了
      mén bèi dǎkāi le　　　　　　*mén bèi kāi le*
      door PASS open ASP　　　　　door PASS open ASP
      'The door was opened'　　　　'The door was opened'

This behaviour would not be predicted, since the verb 开 *kāi* 'open' is a labile verb (cf. 52c-d) and thus has a causative use. Moreover, as we have mentioned, labile

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[67] For the moment being we gloss 打 *dǎ* as 'hit', which is its lexical meaning, but we will go back to the issue in the next section.

[68] Some of the native speakers I asked also did not accept the verb 沉 *chén* 'sink' used with the passive marker: ?船被沉了 *chuán bèi chén le* 'boat PASS sink ASP = The boat was sunk'.

verbs can usually be employed as transitive verbs, but generally speaking the compound form is preferred (cf. Chen J. 2008). These elements seem to suggest that labile verbs are relics of previous stages of the language and that they are probably losing their causative use, following the strong tendency of Chinese toward analyticity. Furthermore, given the fact that in Chinese, differently from English, labile verbs represents only a small part of alternating verbs, we conclude that the causative use of Chinese labile verbs is not due to automatic structure building, since the process would not be regular and transparent, as in the case of English, but rather it is due to the presence of an optional [init] feature in the lexical entry of these verbs. Therefore, a verb like 开 *kāi* 'open' would have the following lexical entry: [(init), proc] (on the features of verb 开 *kāi* 'open', cf. also 4.5.1.2).

4.5 Causativization by means of a light V$_1$

As we have already mentioned, in Mandarin Chinese causativity can often be expressed by means of compounding. In this section we will illustrate causativization by means of a light or dummy V$_1$ added to the verbal root, which forms the transitive version of verbs that do not have an [init] feature in their lexical specification.

Mandarin Chinese has a few phonetically realized light verb (带音的轻动词 *dài yīn de qīng dòngcí*), i.e. verbs that have a general and abstract semantic content (cf. Grimshaw & Mester 1988, Feng 2003, Zhu 2005, Jie 2008)[69], e.g. 打 *dǎ* 'beat, strike, hit', 弄 *nòng* 'make, handle', 搞 *gǎo* 'do' (cf. Otha 2003 [1958]). These verbs often do not represent a particular action, origin or manner, as in the case of the V$_1$s in resultative compounds, but are bleached verbs that just contribute an [init] feature, forming the transitive version of V$_2$, which is a verb lacking the [init] feature in its lexical entry. See the examples in (56) and (57) from Zhu (2005:227):

(56) a. 小虫　　　　死　　了。
　　　Xiǎo Chóng　sǐ　　le
　　　Xiao Chong　die　ASP
　　　'Xiao Chong died.'

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[69] See Grimshaw & Mester's (1988) analysis of Japanesse *suru* 'do' (N+V constructions), Rosen's (1989) analysis of Romance periphrastic VV causatives with 'make', Mohanan's (1994) analysis of Hindi N+V complex predicates and Butt's (2005) analysis of Urdu V+V complex predicates (c. also Butt 2003). In the literature, different notions of light verbs can be found. In Larson (1988), Hale & Keyser (1993), Chomsky (1995), the term 'light verb' functions as an empty place holder in the syntactic structure, with elementary semantics only (cf. Lin T.H. 2001).

b. 小强　　　　弄死　/ 搞死　　　了　　小虫
Xiǎo Qiáng　nòngsǐ / gǎosǐ　　le　　Xiǎo Chóng
Xiao Qiang　nòng-die/ gǎo – die　ASP　Xiao Chong
'Xiao Qiang killed Xiao Chong'

(57) a. 工厂　　　　垮　　了
gōngchǎng　kuǎ　le
factory　　　fail　ASP
'The factory failed'
b. 张三　　　　弄垮 /　　　搞垮　　　了　　工厂
Zhāngsān　nòngkuǎ /　gǎokuǎ　　le　　gōngchǎng
Zhangsan　nòng– fail /　gǎo – fail　ASP　factory
'Zhangsan　made the factory fail'

In (58) some complex verbs with light 弄 *nòng* and 搞 *gǎo* are listed (examples
from Zhu 2005:227, Lü 1981:142 and the 文林 *Wenlin dictionary*):

(58)　弄暗 *nòng'àn*　　　　'darken'
　　　弄白 *nòngbái*　　　　'whiten'
　　　弄沉 *nòngchén*　　　'sink'
　　　弄断 *nòngduàn*　　　'break'
　　　弄清 *nòngqīng*　　　'make clear'
　　　弄开 *nòngkāi*　　　　'open'
　　　弄散 *nòngsàn*　　　　'disperse, scatter'
　　　弄瞎 *nòngxià*　　　　'cause to become blind'
　　　弄醒 *nòngxǐng*　　　'wake up'
　　　搞丢 *gǎodiū*　　　　'lose'
　　　搞坏 *gǎohuài*　　　　'ruin; destroy; break'
　　　搞乱 *gǎoluàn*　　　　'mess up'
　　　搞破 *gǎopò*　　　　　'cause to break'

The two light verbs are roughly equivalent and, in many contexts, they can replace
each other (cf. also 4.5.1.3). The verbs in (58) are all causative verbs formed from
verbs lacking the [init] feature in their lexical entry, which, as we have seen, is the
requirement for being causativized by a light verb (cf. 2.4.2). Causativization by
means of a light verb seems to be possible with all [proc] verbs which can be
conceived as being externally caused[70]. Verbs possessing an [init] feature in their
lexical entry are excluded, since the presence of this feature means that the verb
expresses a causational or initiational state that leads to the process (cf. 1.4;

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[70] According to Pinker (1989), eventualities denoted by internally caused verbs cannot have an
external cause which is at the same time the immediate cause (that is, such eventualities cannot be
construed as being directly caused; cf. fn.22).

Ramchand 2008:40): the Initiator (external argument) initiates the event that leads to the process. Possible exceptions to this general rule are verbs like 弄笑 *nòngxiào* 'make laugh' and 弄哭 *nòngkū* 'make cry', since 笑 *xiào* 'laugh' and 哭 *kū* 'cry' are unergative (internally caused) verbs. These verbs would not be expected to have causative uses, since they are internally caused verbs with an [init] feature in their lexical entries and, thus, they specify an initiational state that leads to the process. However, these two verbs can appear also as V$_2$s of resultative compounds (cf. chapter 5), which is quite exceptional. Gu (1992), Zou (1995) and Chen J. (2008) highlight that in very few cases some verbs of emotion expression, like 哭 *kū* 'cry' and 笑 *xiào* 'laugh', can appear as V$_2$ in resultative compounds. These verbs do not obligatorily involve volitional agents and they can be conceived as uncontrolled actions. Perhaps this is the reason why they can exceptionally appear with a light V$_1$: verbs like 哭 *kū* 'cry' and 笑 *xiào* 'laugh' can causativize by means of a light V$_1$ only if the causee is interpreted as having no control over the action denoted by the predicate (e.g. the mother beat the child so much that he could not help crying); having no control over the action, the eventuality can be considered as being directly caused (cf. Duffield, to appear)[71].

Interestingly, Duffield (to appear) points out a similar case in Vietnamese. Duffield observes that in Vietnamese simple causativization using the verb *làm* 'make' is normally possible only with unaccusative verbs, while it is excluded with unergative verbs. However, it is permitted with unergatives if it is possible to interpret the causee as having no control over the action[72]. See the examples in (59):

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[71] Interestingly, 哭 *kū* 'cry' and 笑 *xiào* 'laugh', as we have seen, behave differently from other unergatives in Mandarin Chinese, since they do not take a dummy object (cf. 1.4.1.2). Recall that Ramchand (2008:109) observes that deadjectival verbs tend to be unaccusative, while denominal verbs tend to be unergative, and speculates, along the lines of Hale & Keyser (1993; cf. also chapter 1, fn.61), that having a nominal feature corresponds in some sense to having a direct internal argument (cf. fn.46 above); thus, denominal verbs basically conform to Burzio's (1986) generalization, which states that a verb which does not assign an external theta-role to its subject does not assign structural accusative Case to an object and vice versa. Therefore, denominal verbs, having a nominal feature, would require an initiator. In the same way, we can assume that, since Chinese unergative verbs take an explicit nominal object (a dummy object), they have an initiator; in a sense, they are alike to English denominal verbs, but differently from them there is no abstract incorporation of the noun from the complement position into the head empty verb (cf. 1.4.1.2). In contrast, 哭 *kū* 'cry' and 笑 *xiào* 'laugh' do not take a dummy object, and also they are not denominal like the corresponding English verbs, thus they would lack a nominal feature. This sets them apart from other unergatives and could be the reason why they are the only unergative verbs appearing as V$_2$ in resultatives (cf. chapter 5) and are also apparently able to causativize by means of a light V$_1$. This issue deserves more investigation.

[72] The causative construction with *làm* can have two orders: '*làm* DP$_2$ V$_2$' and '*làm* V$_2$ DP$_2$'. Duffield (to appear) points out that, while with unergative verbs both orders are excluded, with

(59) a. *Tôi làm gẫy cái que.*
       I   make break CL stick
       'I broke the stick.'
     b. *Tôi làm   đứa con trai khóc.*
        I   make   CL CL male cry
        'I made the boy cry.'
     c. * *Tôi làm   đứa con gái giúp anh ấy.*
          I   make   CL CL girl help PRON DEM
          'I make the girl help him.'

For the moment, we will not take a position as to whether these verbs should be considered as a special type of causative pairs different from the causative alternation[73]. This issue requires further investigation.

Going back to Mandarin Chinese complex verbs formed with a light V_1, we can observe that these complex verbs can choose different kinds of subjects, showing that they can come about without the intervention of a volitional agent (as in the case of English alternating verbs, e.g. English *break*), and thus allow natural forces, as well as agents or instruments, as external causes (cf. L&RH 1995:103). See the examples in (60), from Lin (2001:49) and in (61) from the PKU corpus:

(60) a. 老张   弄破   窗子。(Agentive)
        Lǎo Zhāng   nòngpò   chuāngzǐ
        Lao Zhang   *nòng*-break window
        'Laozhang broke the window.'
      b. 木头   弄破   窗子。   (Instrument)
        mùtou nòngpò   chuāngzǐ
        wood   *nòng*-break window
        'The wood broke the window.'

---

unaccusative verbs both orders can be used (but generally different kinds of unaccusative verbs have a preferred order). Furthermore, with unergative verbs expressing non-volitional eventualities only the order '*làm* DP_2 V_2' is possible.

[73] For example, Levin (1993:31-32) considers non-agentive internally caused verbs, like *burp* or *bleed*, among other instances of causative alternation. The transitive version of these verbs means roughly 'cause to V-intransitive'. These verbs describe internally controlled actions which in certain circumstances can be externally controlled (caused), giving rise to their transitive use. Many of them show a more limited range of objects in their transitive use with respect to the kind of subjects used in their intransitive use, even though both types of arguments bear the same semantic relation to the verb, e.g. *the baby burped / the nurse burped the baby* vs. *the nurse burped / *I burped the nurse*. L&RH (1995:115-119) consider these causative pairs not to be true instances of the causative alternation, but rather idiosyncratic pairs. Other causative pairs, like *buzz, beam, ring*, are considered as 'spurious' causative pairs, i.e. the member of the apparent causative pair involves two different meanings (one of them causative) not derivationally related (L&RH 1995:115). Furthermore, other causative pairs are found among agentive verbs of manner of motion, e.g. *jump, run, march*: they are considered to be a different phenomenon from the inchoative/causative alternation (cf. Levin 1993:31; L&RH 1995:110-112; Ramchand 2008:116-119).

c. 台风　　弄破　　　窗子。　　　　　(Natural force)
táifēng　nòngpò　chuāngzǐ
typhoon　*nòng*-break　window
'The typhoon broke the window.'

(61) a. 他　　粗暴地　　　弄醒　　　他们。
tā　cūbàode　nòngxǐng　tāmen
he　rude-ADV　*nòng*-awake　they
'He rudely awoke them.'

b. [...] 他　　被　　一　　道　　光芒　　　弄醒　　　了 [...]
tā　bèi　yī　dào　guāngmáng　nòngxǐng　le
he　PASS　one　CL　ray of light　*nòng*-awake　ASP
'[...] He was awoken by a ray of light [...]'

c. [...] 我　　被　　一　　只　　摇晃　　　的　　手　　弄醒 [...]
wǒ　bèi　yī　zhī　yáohuàng　de　shǒu　nòngxǐng
I　PASS　one　CL　shake　DE　hand　*nòng*-awake
'[...] I was awoken by a shaking hand [...]'

In our view, these light V$_1$s have the same function as the null *init* head in English (cf. 2.4.2): the light verbs are *init* heads with semantics of general causation, which build an extra-layer on top of verbs without an [init] feature in their lexical entries, forming their transitive version, as it is shown in (62). In these examples, the causing event is left unspecified: different actions can bring about the resultant state expressed by 破 *pò* 'break'.

(62)　a. 窗子　　　　　破　　了。
chuāngzǐ　pò　le
window　　　　break　ASP
'The window broke.'
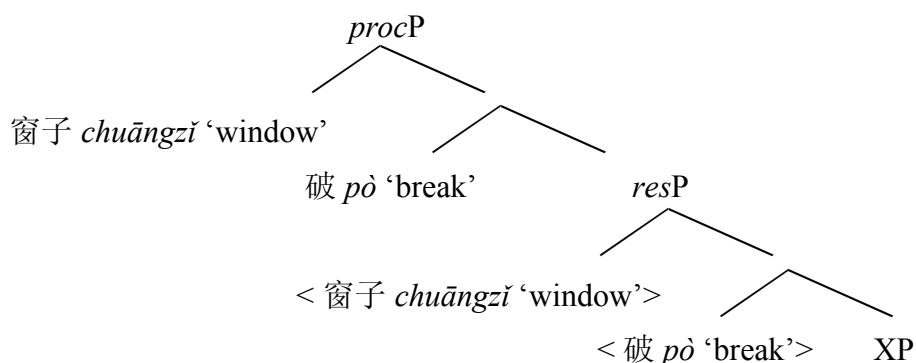
```
                    procP
                   /     \
    窗子 chuāngzǐ 'window'  \
                       破 pò 'break'   resP
                                      /    \
                        < 窗子 chuāngzǐ 'window' >  \
                                    < 破 pò 'break' >   XP
```

b.　　老张　　弄破　　　窗子。(Agentive)
Lǎo Zhāng　nòngpò　chuāngzǐ
Lao Zhang　*nòng*-break　window
'Lao Zhang broke the window.'

initP
老张 *Lǎo Zhāng*
弄 *nòng*   procP
窗子 *chuāngzǐ* 'window'
破 *pò* 'break'   resP
<窗子 *chuāngzǐ* 'window'>
<破 *pò* 'break'>   XP
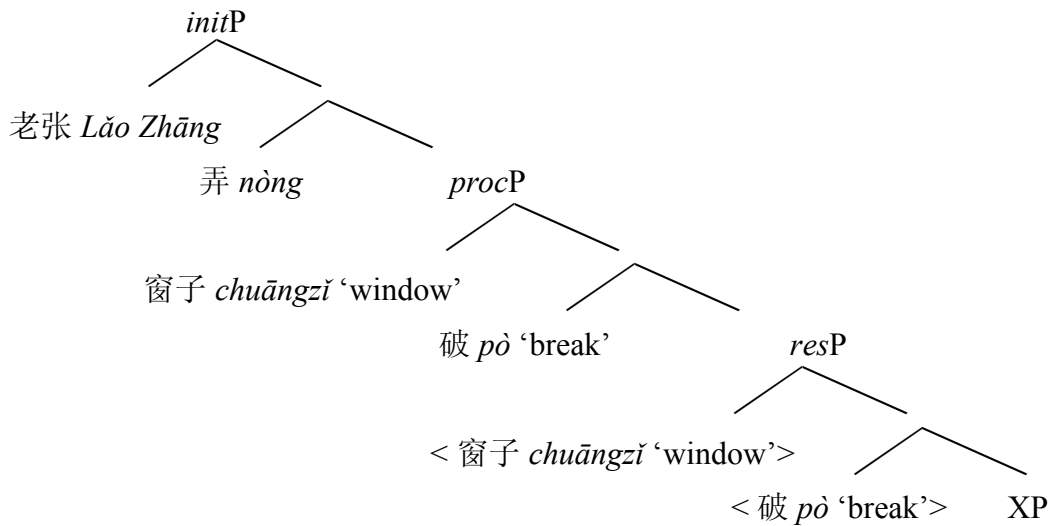
We may conclude that the causative alternation in Mandarin Chinese can be realized by means of light verbs, which are *init* elements that carry a general semantics of causation (in the same way as the null *init* head in English does) and spell out the *init* projection head. This can be seen as a process of structure building which enables us to see that the direction of derivation in the causative alternation is from inchoative to causative, the inchoative version being basic and the causative one being derived (i.e. structurally marked).

As far as headedness is concerned, assuming a structural notion of headedness, it is clear that the light verb is the head of the complex verbs: in Chinese, complex causative verbs formed with a light V_1 are left-headed.

This view of causativization due to structure building is very close in spirit to Hoekstra's (1992, 2004) account of the inchoative/causative pattern shown by verbs like *break*. Hoekstra (1992:172) proposes that lexical causatives (e.g. *break*) do not involve manipulation of the argument structure of the non-causative counterpart, but the causative variant is formed through the syntactic integration of non-causative verbs into an abstract governing verb. The fact that the governing verb is abstract causes the appearance of an alternation of the argument structure of the non-causative counterpart. Therefore, according to Hoekstra (2004:363), transitive causatives are derived from an underlying structure NP CAUSE [$_{SC}$...Pr...], where Pr is the embedded predicate which incorporates into the abstract CAUSE; the predicate created denotes a single event. As for what kind of verbs can causativize, Hoekstra

(2004) argues that only processes[74], i.e. verbs which involve an endpoint but not an initiator/starting point, can causativize[75]; the initiator, in turn, is provided by CAUSE[76]. The subject of accomplishments is only related to the CAUSE and bears no relation to the verb embedded under the CAUSE; it is always interpreted as a cause, in a more or less abstract sense (cf. Sybesma 1992:20).

Sybesma (1992, 1999) adopts Hoekstra's approach in the analysis of Chinese causatives. Following Hoekstra's approach to the causative alternation, Sybesma assumes the following structure for accomplishments:

(63)

```
                    CAUSP
                   /     \
                 NP       CAUSP
                         /     \
                      CAUS      VP
                               /   \
                              V    RESULT CLAUSE
```
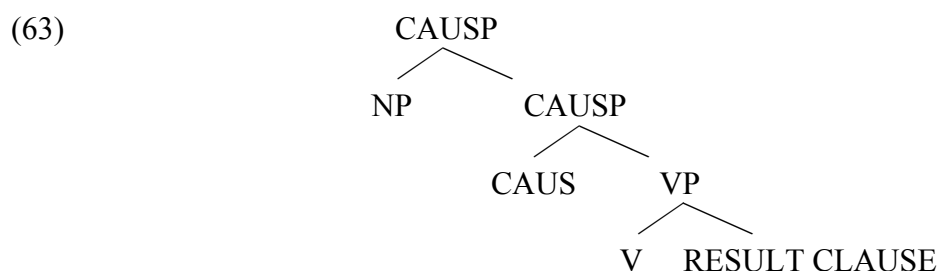
According to Sybesma, all accomplishments must be analysed as consisting of a CAUSP and an embedded VP. Even though the approach adopted by Sybesma is close in spirit to what we have adopted for the causative alternation in Mandarin Chinese by means of a light V_1, since it involves structure building, it is very different from our proposal. Sybesma (1992:154-155; 1999:37 and 181) takes into account causative sentences like the one in (64), involving a resultative compound (on resultative compounds, cf. chapters 5 and 6)[77].

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[74] According to Hoekstra (2004:352, 363), events can be divided into: events in which neither an initiator nor a termination is encoded (e.g. weather verbs); events with an initiator, which is responsible for initiating and sustaining the event, but without a termination (activities); events in which the endpoint (termination) is encoded but lack an initiator (processes); events where both the source/initiator and the termination are encoded (accomplishments).

[75] Recall that not all inchoative verbs undergoing the causative alternation necessarily encode a result (see the case of degree achievement verbs, 4.3.3, 4.3.4 and 4.5.2; cf. also fn. 24). Therefore, what seems to matter is not the presence of an endpoint but rather the absence of an initiator.

[76] We want to stress the fact that Hoekstra's CAUSP is in some respect different from Ramchand's (2008) *init*P. As we have seen (cf. 1.4), the *init*P is present when the verb expresses a causational or initiational state that leads to the process; thus both unergative and transitive verbs have an [init] feature in their lexical entry. In contrast, unaccusative verbs are *proc* verbs not specified for an [init] feature in their lexical entry, thus they lack an initiator (see, for example, 62a). This is why they can causativize by adding an initiator (62b). Recall that in Ramchand's system the difference between pure 'Causes' and actual 'Actors' is that, while an 'Actor' is related to both initiation and process, i.e. it is an Initiator-Undergoer, a 'Cause' is a pure specifier of initiation, i.e. it is just an Initiator (cf. 1.4). Therefore, while in Hoekstra's approach CAUSP is present only with accomplishments, in Ramchand's framework, *init*P is present whenever an initiator is present, thus not only transitives but also unergatives have an *init*P layer (cf. 1.4).

[77] For resultative compounds we will propose a different analysis than the one proposed for causative verbs formed with a light V_1 (cf. chapters 5 and 6).

(64) a. 这 件 事 哭累 了 张三
     zhè jiàn shì kūlèi le Zhāngsān
     this CL matter cry-tired ASP Zhangsan
     'This matter got Zhangsan tired from crying'
    b. 这 件 事 把 张三 哭累 了
     zhè jiàn shì bǎ Zhāngsān kūlèi le
     this CL matter BA Zhangsan cry-tired ASP
     'This matter got Zhangsan tired from crying'

Sybesma (1999:43) considers that all intransitive result structures are unaccusative (in the sense that verbs such as this do not project an external thematic role; cf. Sybesma 1992:161-169; 1999:38-45), e.g. 手绢哭湿了 *shǒujuàn kūshī le* 'handkerchief cry-wet ASP = the handkerchief got wet from crying', 张三哭累了 *Zhāngsān kūlèi le* 'Zhangsan cry-tired ASP = Zhangsan cried (himself) tired/got tired from crying' (cf. Sybesma 1999:38 and 41)[78]. Being unaccusative, a complex verb like 哭累 *kūlèi* 'cry-wet' can be embedded under the higher CAUS predicate and can form causative sentences like those in (64). According to Sybesma, the CAUSP head in the structure in (63) can be phonologically filled in two ways: either the complex head of the VP (e.g. 哭累 *kūlèi* 'cry-wet') moves into the head of CAUSP (64a) or the dummy 把 *bǎ* is inserted (64b; cf. Sybesma 1992:154; 1999:181)[79].

First of all, we consider neither resultative compounds nor complex verbs formed with a light V_1, when used in the intransitive pattern, as being unaccusative (on this issue, cf. 4.5.3 and 6.3.2.4). Furthermore, we have distinguished resultative compounds from complex verbs formed by means of a light V_1, e.g. 弄破 *nòngpò* 'break', where the light V_1 is just an *init* head (we will analyse resultative compounds in chapter 6). Lastly, we think that the kind of causative sentence in (64) is not an instance of the causative alternation, like English *break* (intr.)-*break* (tr.); we will

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[78] To account for the fact that a resultative verb like 哭累 *kūlèi* 'cry-wet' is unaccusative despite V_1 哭 *kū* 'cry' is unergative, Sybesma (1992, 1999) proposes a shift to unaccusativity. This proposal is based on Hoekstra (1988), who proposes that accusative verbs often shift to unaccusativity when followed by a resultative small clause complement. We will not go into the details of his proposal, for which the reader can refer to the mentioned work.

[79] A 把 *bǎ* sentence is characterized as a sentence containing the element 把 *bǎ* (original meaning 'take'), which follows the sentence subject and precedes an NP which is interpreted as the object of the subsequent complex verb phrase (cf. Sybesma 1992:118); the NP following 把 *bǎ* is often considered as the affected object (e.g. Thompson 1973, Li & Thompson 1981, Li Y.H.A. 1990). The issue of 把 *bǎ* is very controversial; as for its position in the structure, different proposal have been made: it is a case assigner (e.g. Huang 1991); it is a full-fledged preposition, occupying a position inside the VP, assigning both Case and theta role (e.g. Li Y.H.A 1990); it is the head of a 把 *bǎ* sentence, which is a causative sentence (Sybesma 1992).

deal with these structure in 6.3.2.5, after presenting our analysis of resultative compounds. What we have argued is that Chinese can express the causative alternation by means of a light V_1; in this way, transitive verbs are formed through structure building from inchoative verbs, i.e. verbs that do not have an initiational (or causative) component, by means of a light verb which fills the causing projection head. For example, an inchoative verb like 破 *pò* 'break' can causativize by means of the light verb 弄 *nòng*, giving as a result the transitive verb 弄破 *nòngpò* 'break' (cf. ex. 62)[80]. Accordingly, if we were to adopt Hoekstra's (1992, 2004) approach, in the case of Chinese transitive verbs formed with a light V_1 that we have considered in this section, the CAUSP head (CAUS) would be filled by a light verb, e.g. 弄 *nòng*. Therefore, 弄破 *nòngpò* 'break' (tr.) would have the following structure: NP CAUSE (弄 *nòng*) [$_{SC}$ 破 *pò* 'break'], where 破 *pò* 'break' is a *proc* verb (and, thus, lacks an initiator), while 弄 *nòng* is a causative light verb which fills CAUSE. Adopting Ramchand's system, as we have seen, we have proposed that causative light verbs like 弄 *nòng* are *init* heads which build an extra-layer on top of *proc* verbs, forming their transitive variant.[81]

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[80] When 弄破 *nòngpò* 'break' surfaces as intransitive, e.g. 窗子弄破了 *chuāngzǐ nòngpò le* 'window *nòng*-break ASP = the window was broken', we argue that it is a pseudo-passive (cf. 4.5.3) rather than an unaccusative.

[81] Note that all the causative verbs formed with a light verb we have presented up to now can be used in the 把 *bǎ* construction (cf. fn. 79), e.g. 我把窗子弄破了 *wǒ bǎ chuāngzǐ nòngpò le* 'I BA window *nòng*-break = I broke the window'. In Sybesma's approach, 把 *bǎ* would provide an initiator to the event. It is beyond the scope of this thesis to try to give an account of this structure (for an overview, cf. Sybesma 1992, 1999), so we cannot take a position as to the status and the place of 把 *bǎ* in the structure; we speculate that 把 *bǎ* does not fill the *init*P head, but rather occupies a functional projection external to the three-layer structure of the event proposed by Ramchand (2008). The fact that 把 *bǎ* has a different function from the one of causative light verbs considered here seems to be confirmed by the fact that you cannot simply replace a causative light verb with 把 *bǎ*, forming the causative variant of a *proc* verb: e.g. 窗子破了 *chuāngzǐ pò le* 'window break ASP = the window broke'; 我弄破了窗子 *wǒ nòngpò le chuāngzǐ* 'I *nòng*-break ASP window = I broke the window'; *我把窗子破了 *wǒ bǎ chuāngzǐ pò le* 'I BA window break ASP = I broke the window' vs. 我把窗子弄破了 *wǒ bǎ chuāngzǐ nòngpò le* 'I BA window *nòng*-break ASP = I broke the window'. Note also that 把 *bǎ* can occur both with complex verbs and with simple transitive verbs, as in 他把猪卖了 *tā bǎ zhū mài le* 'he BA pig sell ASP = he sold the pig' (cf. Sybesma 1992:179; 1999:146). Sybesma (1992, 1999) argues that these cases involve a phonologically empty resultative predicate.

4.5.1 打 *dǎ* 'hit' as a light verb

Among light verbs, one very interesting case is represented by 打 *dǎ*, which is related to a verb whose lexical meaning is 'hit, beat, strike'[82]. When 打 *dǎ* appear as the V₁ of a [V V] compound, it is often ambiguous between being a full verb, which forms a resultative compound, or a light verb. For example, the meaning of a compound such as 打死 *dǎsǐ* '*dǎ*-die' could be either 'beat and kill (make die) as a result' or simply 'kill (make die)': in the latter case, the resultant state 'die' can be reached performing different actions, as for example by shooting (65):

(65) 小明   开枪   打死   了 一   只
Xiǎo Míng   *kāiqiāng*   *dǎsǐ*   *le yī*   *zhī*
Xiao Ming   shoot   *dǎ*-die ASP one   CL
'Xiao Ming shot and killed one (bird)'
(From the PKU corpus)

Differently, in the example in (66) the same resultant state is brought about by throwing an hand grenade:

(66) 马英   的 心   突然   紧张   起来，脑子 里   浮起   一   个
Mǎ Yīng de xīn   *tūrán*   *jǐnzhāng qǐlái nǎozi lǐ*   *fúqǐ*   *yī ge*
Ma Ying DE heart   suddenly nervous   start   brain   inside emerge one CL
念头：" 打死 他！"
niàntou dǎsǐ tā
idea   *dǎ*-die he
'Ma Ying suddenly started to be nervous; an idea came to his mind: "Kill him!'.

Finally, he decided to kill by means of an hand grenade:

[...]

马英   掏出   手榴弹，   拉出 线，照准   那   个   鬼子
Mǎ Yīng tāochū shǒuliúdàn   *lāchū xiàn zhàozhǔn nà*   *ge*   *guǐzi*
Ma Ying take out hand grenade pull   wire aim at   that   CL foreign devil
扔过去
throw-go over
'Ma Ying took out the hand grenade, pulled the wire and threw it towards the foreign devil'
(From the novel: 平原枪声 'Gunshot in a plain', chapter 7, by Li Xiaoming: http://cyc6.cycnet.com:8090/minzu/rmhn/xiaoshuo/content.jsp?id=16169&pageno=5)

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[82] Actually, 打 *dǎ* can also be used with a wide range of different meanings, e.g. 'make', 'build', 'create', etc., as we will see later on.

The examples in (67) and (68) further illustrate this point, namely that different actions can bring about the resultant state expressed by V₂.

(67) 用　毒　针　打死
yòng　dú　zhēn　dǎsǐ
use　poison　injection　dǎ-die
'Kill by means of poison injection'
(Google search, July 2009)

(68) 或者　把　老虎　打死，或者　被　老虎　吃掉
huòzhě　bǎ　lǎohǔ　dǎsǐ　huòzhě　bèi　lǎohǔ chīdiào
or　BA　tiger　dǎ-die　or　PASS　tiger　eat-up
'Either kill the tiger or be eaten up by it—one way or the other.'
(From the Nciku Dictionary:
http://www.nciku.com/search/all/%E6%89%93%E6%AD%BB)

The same ambiguity in [V V] compounds with 打 dǎ as V₁ arises with different kinds of V₂s: in an out-of-the-blue context, 打 dǎ can be interpreted either as a full lexical verb or as a light causative verb. For example, a compound like 打坏 dǎhuài 'ruin, spoil, break' can either mean 'hit/strike and ruin/break as a result' or simply 'break'; the same can be said of compounds like 打破 dǎpò 'break' or 打碎 dǎsuì 'break, smash into pieces'. However, when 打 dǎ functions as a light verb, it does not express a specific action. See the examples from (69) to (83): in some of these examples 打 dǎ can be considered as a normal resultative or as a light verb (e.g. 69), even if the verb is placed in a particular context, while in other cases it is clear that the resultant state can be brought about by different actions and that 打 dǎ does not indicate a particular action, but rather acts as a light verb. Moreover, in some examples it is clear that 打 dǎ cannot have a concrete meaning and is just used to make the verb transitive.

打坏 dǎhuài 'ruin':

(69) 他们　现在　用　斧子　锤子　打坏　了
tāmen xiànzài yòng fǔzi　chuízi　dǎhuài le
they　now　use　ax　hammer　dǎ-ruin ASP
'Thy are now　ruining (it) with axes and hammers.'
(From Psalm 74, Chinese Bible: http://cus.holybible.com.cn/psalms/74.htm)

(70) 他　降　冰雹　打坏　他们　的　葡萄树，　下　严霜
tā　jiàng　bīngbáo dǎhuài tāmen de pútáoshù　xià　yánshuāng
he　descend hail　dǎ-ruin　they　DE　grapewine descend cold

打坏 他们 的 桑树。
dǎhuài tāmen de sāngshù
dǎ-ruin they DE mulberry tree
'He sent hail to spoil their grapewines, sent heavy frost to ruin their mulberry trees.'
(From Psalm 78:47, Chinese Bible: http://holybible.com.cn/psalms/78-47.htm)

(71) 他们 开枪 打坏 了 门锁
tāmen kāiqiāng dǎhuài le ménsuǒ
we shoot *dǎ*-ruin ASP lock
'They broke the lock by shooting at it'
(Google search, August 2009)

打破 *dǎpò* 'break'[83]:

(72) 我 失手 打破 了 花瓶。
wǒ shīshǒu dǎpò le huāpíng
I lose hold *dǎ*-break ASP vase
'I broke the vase by letting it slip.'
(From the Nciku dictionary:
http://www.nciku.com/search/zh/detail/%E5%A4%B1%E6%89%8B/1313621)

(73) 突然， 一 阵 手机 铃声 打破 了 屋 里
tūrán yī zhèn shǒujī língshēng dǎpò le wū lǐ
suddenly one CL mobile phone ringing *dǎ*-break ASP room inside
的 寂静
de jìjìng
DE silence
'Suddenly the ringing of a mobile phone broke the silence in the room.'
(From the Nciku dictionary:
http://www.nciku.com/search/zh/detail/%E9%93%83%E5%A3%B0/104995)

(74) 欧洲 资产阶级 革命 打破 了 帝王
Ōuzhōu zīchǎnjiējí gémìng dǎpò le dìwáng
Europe bourgeoise revolution *dǎ*-break ASP emperor
'The bourgeoise revolution in Europe destroyed the empire'
(From the PKU corpus)

打碎 *dǎsuì* 'break, smask into pieces':

(75) 小 黄瓜 用 果汁机 打碎
xiǎo huángguā yòng guǒzhījī dǎsuì
small cucumber use juicer *dǎ*-break
'Smash the small cucumber into pieces with the juicer'
(Google search, August 2009. Receipe instruction)

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[83] In the examples (73) and (74), 打破 *dǎpò* 'break' does not express a concrete meaning, but rather an abstract one. The verb 破 *pò* at V₂ position began to have an abstract meaning in Late Middle Chinese and began to undergo lexicalization (cf. Xu 2006:186).

(76)　瓷器　　　　　容易　打碎
　　　cíqì　　　　　*róngyì dǎsuì*
　　　porcelain　　easily　*dǎ*-break
　　　'Porcelain breaks easily'
　　　(Google search, July 2009)

(77)　如果　这　个　杯子　掉下去　　　打碎　了 [...]
　　　rúguǒ zhè　ge　bēizi　diào-xiàqù　dǎsuì　le
　　　if　this　CL　glass　fall-go down　*dǎ*-break　ASP
　　　'If this glass breaks by falling down [...]'
　　　(From the PKU corpus)

(78)　一　尊　塑像　倒下,　砸　在　石头　上　打碎　了
　　　yī　zūn　sùxiàng dǎoxià　zá　zài　shítou shàng dǎsuì　le
　　　one　CL　statue　fall down strike　at　rock　on　*dǎ*-break ASP
　　　'A statue fell and broke striking on a rock'
　　　(Google search, August 2009)

打败 *dǎbài* 'defeat':

(79)　上海　　队　打败　　　了　北京　队
　　　Shànghǎi　duì　dǎbài　le　Běijīng duì
　　　Shanghai　dui　*dǎ*-defeat　ASP　Beijing team
　　　'Shanghai team defeated Beijing team'
　　　(Google search, August 2009)

打熄 *dǎxī* 'extinguish':

(80)　用　河水　　　打熄　　　了　火堆　后 [...]
　　　yòng héshuǐ　dǎxī　le　huǒduī hòu
　　　use　river-water　*dǎ*-extinguish ASP　bonfire after
　　　'After having extinguished the bonfire using river-water [...]'
　　　(From the novel 君心如旧 'The spirit of a gentleman as in the old times',
　　　chapter 7, by Murong Yuhu:
　　　http://wenxue.xilu.com/MRYH/397860/64739)

打湿 *dǎshī* 'wet':

(81)　泪水　一次次　　　打湿　了　她　的　手帕
　　　lèishuǐ yī-cì-cì　dǎshī　le　tā　de　shǒupà
　　　tear　one-after-other *dǎ*-wet　ASP　she　DE　handkerchief
　　　'The tears one after the other wetted the handkerchief.'
　　　(From the PKU corpus)

打醒 *dǎxǐng* 'wake up':

(82)　一　个　手机　　铃声　　　打醒　　　了　他
　　　yī　ge　shǒujī　língshēng　dǎxǐng　le　tā
　　　one　CL　mobile phone　ringing　*dǎ*-awake　ASP　he
　　　'The ringing of one mobile woke him up'
　　　(Google search, August 2009)

打消 *dǎxiāo* 'give up':

(83) 我   打消   了   去   参加 晚会   的   念头。
    wǒ   *dǎxiāo*   *le*   *qù*   *cānjiā* *wǎnhuì* *de*   *niàntou*
    I   *dǎ*-disappear   ASP   go   attend party   DE   idea
    'I gave up the idea of going to the party.'
    (From the Nciku dictionary:
    http://www.nciku.com/search/zh/detail/%E6%89%93%E6%B6%88/1302654)

Given the wide use and the wide range of meanings that 打 *dǎ* can assume, it does not come as a surprise that 打 *dǎ* + V compounds can be often ambiguous between being resultative compounds or transitive verbs formed with a light V_1. For example, in the sentence in (69), the compound can easily be interpreted as 'hit (using axes and hammers) and ruin as a result'. This ambiguity is very likely to arise with those compounds meaning 'break' and the like, since 'break' often presupposes some sort of 'hitting'. However, we have seen from the examples above, that the resultant state expressed by 'break' can be attained by performing different kinds of actions, for example by letting something slip (72), by shooting at something (71), by putting something in a particular device (75). Therefore, the context can make clear what kind of action I performed in order to 'break' (打破 *dǎpò* 'break' or 打碎 *dǎsuì* 'break, smash into pieces', etc.) something[84].

Given the peculiarities of 打 *dǎ* and the problems which arise from this item, in the next section we will briefly show the diachronic development of this lexical item, in order to try to understand the origins of its multiple functions.

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[84] The question is even more problematic in cases such as 打破 *dǎpò* 'break' or 打碎 *dǎsuì* 'break, smash into pieces', since dictionaries register among the meanings of the verb 打 *dǎ* also 'smash /break after ramming/dash against/crashing' (因撞击而破碎; cf. HDYC 1999 and Lü 1980). However, some observations are needed: first of all, 打 *dǎ*, in the sense of 'break', can be used only with some kind of objects that can break into pieces (e.g. eggs, glass, containers, etc., cf. HDYC 1991); moreover, it is apparently more often used as an intransitive (middle or pseudo-passive) form (cf. XHGC 2004, CCD 2002), e.g. 那个瓶子打了一个多星期了 *nà ge píngzi dǎ le yī ge duō xīngqī le* 'that CL bottle break ASP one CL more week ASP = That bottle was broken more than one week ago' (cf. HDYC 1999). Finally, some of my informants told me that only 打破 *dǎpò* or 打碎 *dǎsuì* actually mean 'break', and that in 我打了玻璃 *wǒ dǎ le bōli* 'I *dǎ* ASP glass' 打 *dǎ* just means 'hit'; we cannot know whether the glass broke or not. Furthermore, one of my informant even did not accept at all the last sentence, saying that without the proper context the sentence is difficult to understand, apparently due to the vagueness of 打 *dǎ*. We can speculate that 打 *dǎ* can mean 'break' in the sense of 'performing the act of breaking' in a generic sense, which can involve different kind of actions; this point deserves further investigation, however, we consider that in compounds such as 打破 *dǎpò* 'break' or 打碎 *dǎsuì* 'break, smash into pieces' 打 *dǎ* either means 'hit' or is a light verb. Note, also, that if in these compounds 打 *dǎ* meant 'smash/break after ramming/dash against/crashing', V_2 would be somehow redundant.

4.5.1.1 On the origin and development of the verb 打 *dǎ*

According to Schuessler (2007), the verb 打 *dǎ* appeared fairly late in Chinese. Its original meaning is: (用手或器物) 撞击 (物体) 'beat, hit something (using hands or instruments)' (cf. Zhu 2003).

During the Tang dinasty (618-907 A.D.), 打 *dǎ* began to assume a more flexible and general meaning (cf. Zhu 2002, 2003): this tendency to meaning extension, indicating every kind of action (打 *dǎ* + NP), was common during the Song (960-1279) and Yuan (1279-1368) dinasties (84a) and is still common in Mandarin Chinese (84b).

(84) a. 打毬 *dǎ qiú* '*dǎ* + ball = play ball games'
     打鱼 *dǎ yú*   '*dǎ* + fish = to fish'
     打兔 *dǎ tù*   '*dǎ* + rabbit = hunt rabbits'
     打碑 *dǎ bēi* '*dǎ* + tablet = make rubbings'
     打水 *dǎ shuǐ* '*dǎ* + water = draw water'
     (Examples from Zhu 2003:471)

    b. 打喷嚏 *dǎ pēntì*   '*dǎ* + sneeze = sneeze'
     打工   *dǎ gōng*   '*dǎ* + work = work'
     打球   *dǎ qiú*   '*dǎ* + ball = play a ball game'
     打枪   *dǎ qiāng*   '*dǎ* + gun = shoot'
     打电脑 *dǎ diànnǎo* '*dǎ* + computer = use a computer'
     打电话 *dǎ diànhuà* '*dǎ* + telephone = make a phone call'
     打票   *dǎ piào*   '*dǎ* + ticket = buy a ticket'

In this case, 打 *dǎ* can be considered as a phonetically realized light verb, verbalizing nouns, similarly to English examples like *phone* (N) – *to phone* (V), fish (N) – *to fish* (V), etc.; for English, it has been claimed that the verb derives from the corresponding noun through conflation (cf. Hale & Keyser 1993), or that they are items endowed with both verbal and nominal features (cf. Ramchand 2008; cf. also 3.3.2). In the case of Chinese, the *init* head has to be realized overtly (cf. Lin T.H. 2001:41-42)[85], much like in the case of Japanese *suru* 'do', e.g. 話する *hanashi suru*

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[85] The cases of denominal verbs found in Mandarin Chinese can be seen as relics of Old Chinese, where, as we have seen in chapter 3, they were productive: e.g. 老王架着这些书 *Lǎo Wáng jià zhe zhèxiē shū* 'Lao Wang shelf ASP these book = Lao Wang shelves these books'. (cf. Lin T.H. 2001:39). A list of denominal verbs in Mandarin Chinese is found in Chan & Tai (1995), who have singled out some classes of Chinese denominal verbs, based on Clark & Clark (1979) categories.

'speech *suru* = to speak', パーティーする *paatii suru* 'party suru = to have a party' (cf. Lin T.H. 2001:51).

Furthermore, the verb 打 *dǎ* began to develop a further meaning, i.e. 'create', 'build', 'make...come into being' (制作, 使……产生), as in 打墙 *dǎ qiáng* 'build + wall = build an earth wall' (cf. Zhu 2002, 2003).

Later, 打 *dǎ* started to develop a more abstract meaning, roughly equivalent to 使 *shǐ* 'cause', like 打砌 *dǎqì* '*dǎ* + build = build' (cf. Zhu 2003).

In the period that goes through Tang to Song and Yuan periods, 打 *dǎ* started to appear in a new construction, namely 打 *dǎ* +A, with the meaning of 'make...come into being' (使……产生), i.e. 'cause the bringing about of A', as in the examples in (86), from Zhu (2003: 472):

(85)　打硬 *dǎyìng*　'*dǎ* + hard = harden'
　　　打软 *dǎruǎn*　'*dǎ* + soft = soften'
　　　打强 *dǎqiáng*　'*dǎ* + strong = strengthen'
　　　打蹒 *dǎpán*　　'*dǎ* + limp = make limp'

The constrution 打 *dǎ* +A did not survive in Mandarin Chinese (with some possible exceptions, see later on) and the transitive version of a deadjectival verb, as we will see, is now built by adding to it different light verbs, i.e. 弄 *nòng* 'make' and 加 *jiā* 'increase'.

The verb 打 *dǎ* began to be used more frequently with a more abstract meaning, in combination with a verb (打 *dǎ* +V), during the Song, Yuan (960-1368) and Ming (1368-1644) dinasties, as in the examples in (86), from Zhu (2003: 472):

(86)　打招 *dǎzhāo*　'*dǎ* + recruit = recruit'
　　　打折 *dǎzhé*　　'*dǎ* + snap = snap'
　　　打围 *dǎwéi*　　'*dǎ* + surround = surround'
　　　打看 *dǎkàn*　　'*dǎ* + see = see'
　　　打睡 *dǎshuì*　　'*dǎ* + sleep = sleep'
　　　打眠 *dǎmián*　　'*dǎ* + sleep = sleep'

At the beginning, in 打 *dǎ* +V combinations, V acted as the complement of 打 *dǎ* and, thus, the whole compound could not take an object. However, starting from the

Song and Ming periods, the compound became a word and began to behave as a transitive verb, taking an object (87).

(87)　　　[...] 第三　　日　　打断　　　　公事 。
　　　　　　　dìsān　*rì*　*dǎduàn*　　*gōngshì*
　　　　　　　third　 day　 deal with　 public affairs
　　　　　　　'[...] The third day [he] dealt with public affairs.'
　　　　　　　(警世通言·皂角林大王假形 'Jingshi Tongyan - Zaojiaolin Dawang Jiaxing', from Zhu 2003:474)

At this point, according to Zhu (2003), the grammaticalization process was over: 打 *dǎ* became a verbal affixal element with a grammatical meaning.

According to Zhu (2003), since the Ming period, the productivity of 打 *dǎ* began to decline. Some of 打 *dǎ* ＋V verbs, probably those most commonly used, remained in the lexicon, e.g. 打扫 *dǎsǎo* 'sweep, clean', 打搅 *dǎjiǎo* 'disturb', 打探 *dǎtàn* 'make inquiries discretely'. Some of them underwent a change in meaning, e.g. 打量 *dǎliang* 'estimate', 打听 *dǎtīng* 'inquire', 打点 *dǎdiǎn* 'prepare', 打发 *dǎfa* 'send on an errand, fire, take care of, etc.', 打算 *dǎsuàn* 'plan', etc.

In Modern Chinese, 打 *dǎ* preserves many of the functions we have listed so far: it is a full lexical item meaning 'hit, beat, strike', but also 'make, create'; it is a phonetically realized light verb which forms denominal verbs, e.g. 打喷嚏 *dǎ pēntì* '*dǎ* + sneeze = sneeze', but also the transitive variant of change of state verbs; finally, it is found in some lexicalized forms, such as 打扫 *dǎsǎo* 'sweep, clean'. Therefore, it is not always easy to recognise what the role of 打 *dǎ* exactly is. To this respect, we would like to spend a few words on the contrast between 开 *kāi* 'open' and 打开 *dǎkāi* 'open', which we have briefly mentioned in section 4.4 (ex. 55).

4.5.1.2 开 *kāi* 'open' vs. 打开 *dǎkāi* 'open'

In section 4.4, we have introduced labile verbs in Mandarin Chinese, among which 开 *kāi* 'open'. We have seen that, usually, even when a labile verb is available, a compound form (either a resultative or a complex verb with a light V₁) is preferred for expressing the causative meaning. Therefore, it would seem that in a verb like 打开 *dǎkāi* 'open', 打 *dǎ* is an *init* head with semantics of general causation, which spells

out the *init* layer. However, if we look at the behaviour of 开 *kāi* 'open' and 打开 *dǎkāi*, this does not seem to be the case.

In many contexts 开 *kāi* 'open' and 打开 *dǎkāi* 'open' are interchangeable, both being used as transitive or intransitive verbs. See the examples in (88):

(88)   a. 我 开 了 门   vs.   b. 我 打开 了 门
         wǒ kāi le mén   *wǒ dǎkāi le mén*
         I open ASP door   I *dǎ*-open ASP door
         'I opened the door'   'I opened the door'
        c. 窗户 开 了   vs.   d. 窗户 打开 了
         chuānghu kāi le   *chuānghu dǎkāi le*
         window open ASP   window *dǎ*-open ASP
         'The window opened'   'The window opened'

However, as we have seen (cf. 4.4, ex. 55), the form 打开 *dǎkāi* 'open' is preferred in passive constructions. Therefore, it could be thought that 打开 *dǎkāi* 'open' is the complex variant of 开 *kāi* 'open', where 打 *dǎ* is a causative light verb, marking the transitive variant of 开 *kāi* 'open'. If this were the case, when 打开 *dǎkāi* 'open' is used intransitively, it should be considered as a pseudo-passive; in fact, as we will see later on, both verbs formed with a light V$_1$ and transitive resultative compounds can be used intransitively but are not unaccusative. It has been shown (cf. Cheng & Huang 1994, Tang 2002, Ting 2003, Chiang 2006), that resultative compounds, when used intransitively, are not deep ergative verbs but rather surface ergatives, since they involve agentivity; in other words, they can be considered middles (cf. Cheng & Huang 1994, Ting 2003) or pseudo-passives (cf. Cheng & Huang 1994, Chiang 2006) rather than unaccusatives (we will return to this issue in 4.5.3). In contrast, the verb 打开 *dǎkāi* 'open' itself seems to be a labile verb, exhibiting the causative alternation; when it is used intransitively, it seems to behave as an unaccusative verb, as confirmed by its ability to occur with 自动 *zìdòng* 'voluntarily; automatically'. See the examples in (89), adapted from Tien (2003):

(89)   a. 门 自动 打开 了
         mén zìdòng dǎkāi le
         door automatic open ASP
         'The door automatically opened'
        b. *门 自动 推开 了
         mén zìdòng tuīkāi le
         door automatic push-open ASP

'The door automatically pushed-open'

Moreover, 开 *kāi* 'open' and 打开 *dǎkāi* 'open' seem to differ in their features. In fact, 开 *kāi* 'open' seems to be atelic; native speakers judge as acceptable sentences like the one in (90):

(90) 我　　开　　门　　开　　了　　半天，　　但是　　没　　　　打开
     wǒ　kāi　mén　kāi　le　bàntiān,　dànshì　méi　　dǎkāi
     I　open　door　open　ASP　long time　but　not　open
     'I opened the door for a long time, but I didn't open it'

See also the example in (91) from the PKU corpus:

(91)   [...] 温特　　拿出　一　大　把　古色　古香　　　的　钥匙，
       Wēn Tè　náchū　yī　dà　bǎ　gǔ sè　gǔ xiāng　de yàoshi
       Wen Te　take-out　one big　CL　old colour old scented　DE key
开　了　　半天　开　不　开
kāi　le　　bàntiān　kāi　bù　kāi
open　ASP　　long time　open　not　open
'[...] Wen Te took out a bunch of old-coloured old-scented keys, opened for a while, but could not open (it)'

Therefore, 开 *kāi* 'open' seems to have the features [(init), proc] (cf. 4.4). In contrast, 打开 *dǎkāi* 'open' seems to encode a result. As a matter of fact, native speakers do not accept sentences like those in (92):

(92) a.*我 打开 门　　打开 了　　半天，　　但是　还是　没有　打开
      wǒ dǎkāi mén　dǎkāi le　　bàntiān dànshì háishì méiyǒu dǎkāi
      I　open door　open　ASP　long time but　still　not　open
      'I opened the door for a while, I still did not open it yet'
     b. *我 打开 了　半天，　　但是　打　不　　开
      wǒ dǎkāi le　　bàntiān　dànshì dǎ　bù　kāi
      I　open ASP　long time　but　hit　not　open
      'I opened (it) for a while, but I could not open (it)'

Moreover, it seems that in some contexts only 打开 *dǎkāi* 'open' is acceptable, as shown by the examples in (93), from Feng (2005:3):

(93) a. *开　书　　到　　第五　页　　　vs.　b. 打开　书　　到 第五 页
     kāi　shū　dào　dìwǔ　yè　　　　　　　*dǎkāi　shū　dào dìwǔ yè*
     open　book　to　　fifth　page　　　　　open　　book to　fifth page
     'Open the book to page five'　　　　　　'Open the book to page five'

Therefore, what seems to emerge is that, in the case of 打开 *dǎkāi* 'open', 打 *dǎ* is not a causative light verb added to the root 开 *kāi* 'open', spelling out the *init* layer; rather, it seems that 打开 *dǎkāi* 'open' is an independent lexical entry, which exhibits the causative alternation, i.e. it is a labile verb. Therefore, 打开 *dǎkāi* 'open' is a lexicalized form, similar to those considered at the end of the previous section, e.g. 打扫 *dǎsǎo* 'sweep, clean', 打搅 *dǎjiǎo* 'disturb'. From the above discussion, we conclude that 打开 *dǎkāi* 'open' is a labile verb with an optional [init] feature, as in the cases seen in 4.4; differently from 开 *kāi* 'open', it is specified for both [proc] and [res] features: 打开 *dǎkāi* [(init), proc, res].

4.5.1.3 The source of 打 *dǎ* as a light verb: A comparison with other Sinitic languages

As we have seen (cf. 4.5.1 and 4.5.1.1), the root 打 *dǎ* in Mandarin Chinese still preserves a grammatical use, as a light verb, in two contexts: in the 打 *dǎ* + NP construction (see the examples in 84b), building denominal verbs, and in the 打 *dǎ* + V construction, as a causative element which builds the transitive version of verbs lacking the [init] feature in their lexical entry (as we have seen in 4.5.1). In this case, 打 *dǎ* does not express any particular action, but simply alters the argument structure of an intransitive *proc* verb, forming its transitive counterpart, in the same way as 弄 *nòng* does (cf. 4.5). As we will see later on in this section, we think that this is possible due to some semantic characteristics of the verb 打 *dǎ*. Therefore, if in a sentence like that in (94a) we consider 打 *dǎ* as a light verb (cf. 4.5.1), the sentence would be represented as in (94b).

(94) a. 我　打死　　了　他。
      wǒ dǎsǐ le tā
      I *dǎ*-die ASP he
      'I killed him.'

b.   *init*P

我 *wǒ* 'I'

打 *dǎ*   *proc*P

他 *tā* 'he'

死 *sǐ* 'die'   *res*P

< 他 *tā* 'he'>

< 死 *sǐ* 'die'>   XP
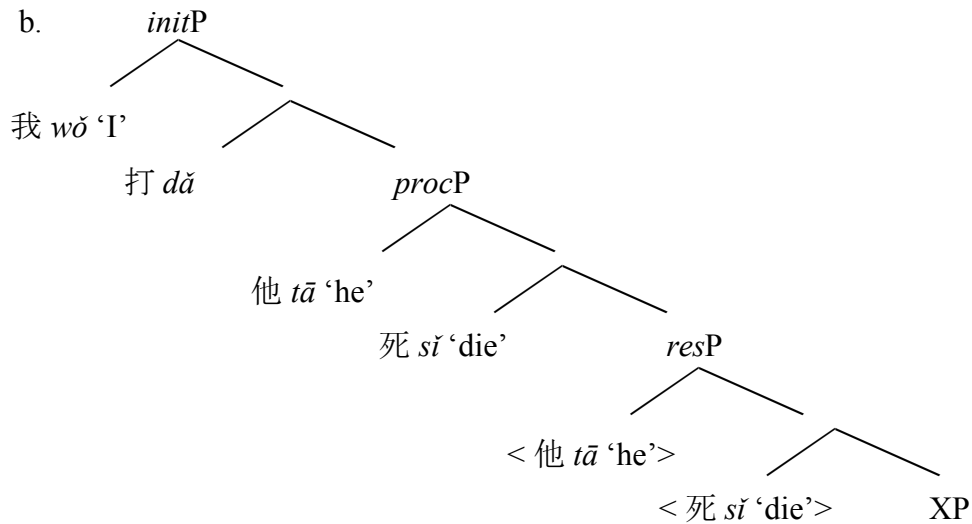
However, even though we have argued that 弄 *nòng* and 打 *dǎ* can have the same role as light verbs, 弄 *nòng* generally can form the transitive version of any verb without an [init] feature, including many deadjectival verbs, without any particular restrictions, while the use of 打 *dǎ* seems to be more restricted. This probably has to do with the fact that the use of 打 *dǎ* can generate ambiguity, as we have seen in the previous sections: in some contexts 打 *dǎ* is ambiguous between being a full verb ('hit, beat, strike') and a light verb, creating difficulties in interpretation.

Interestingly, apparently also Taiwanese Southern Min (TSM) and Hakka have light verbs, that can be considered as the equivalent of Mandarin 打 *dǎ*, which originate from verbs meaning 'strike, beat, hit', i.e. TSM 拍 *phah4* and Hakka 打 *da2*. According to Lien (1998), the verb 拍 *phah4* in TSM is a lexeme with substantial and functional meanings. The substantial meaning of 拍 *phah4* consists of different senses, e.g. 'hit', 'create', 'remove', 'get', 'buy', much as in the case of Mandarin Chinese 打 *dǎ*. Besides its use as a lexeme, 拍 *phah4* can also build verbs out of nouns (as in the case of Mandarin 打 *dǎ*, cf. ex. 84) in the '拍 *phah4* + NP' construcion, e.g. 拍咳嚏 *phah4 ka1 chiunn3* '*phah4* + sneeze = sneeze' (cf. Mandarin 打喷嚏 *dǎ pēntì* '打 *dǎ* + sneeze'), 拍水 *phah4 cui2* '*phah4* + water = draw water' (cf. Mandarin 打水 *dǎ*

shuǐ '打 *dǎ* + water'), 拍票 *phah4 phio3* '*phah4* + ticket = buy a ticket' (cf. Mandarin 打票 *dǎ piào* '打 *dǎ* + ticket')[86].

Moreover, according to Lien (1999), in TSM a simplex intransitive verb may become transitive when preceded by the dummy verb 拍 *phah4*: 拍 *phah4* serves to change the argument structure of the simplex verb[87]. The compound verb is a newly rising construction superseding the old causative verb; see the examples in (95), from Lien (1999:8):

(95) 拍勼 *phah4 kiu1*   'shrink'
     拍皺 *phah4 jiau5*   'crumple'
     拍破 *phah4 phoa3*   'break'
     拍散 *phah4 sam3*   'put in disorder'
     拍斷 *phah4 tng7*   'break'
     拍散 *phah4 soan3*   'scatter'
     拍熄 *phah4 sit4*   'extinguish'
     拍驚 *phah4 kian1*   'scare'
     拍否 *phah4 phai2*   'spoil'
     拍醒 *phah4 chhin2* 'wake'

In Hakka (Yeh 2008) the verb 打 *da2* apparently has the same function as 拍 *phah4* in TSM, as it is shown in (96), from Yeh (2008:67-68):

(96)   打壞   *da2 fai3*   'break'
     打缺   *da2 kiet4*   'chip'
     打孅   *da2 met8*   'to make dirty'
     打毋見   *da2 m5gien3* 'to make something disappear'

Furthermore, we want to stress the fact that in Hakka, as well as in Mandarin Chinese and TSM, 打 *da2* can be used to make verbs out of nouns ('打 *da2* + NP' construction), e.g. 打銃仔 *da2 chung3 er5* '*da2* + gun = to shoot with a gun' (cf. Mandarin 打枪 *dǎ qiāng* '打 *dǎ* + gun'), 打噎琢 *da2 et8 duk8* '*da2* + hiccup = to hiccup' (cf. Mandarin 打嗝 *dǎ gé* '打 *dǎ* + hiccup'), 打粉 *da2 fun2* '*da2* + powder = to powder' (Mandarin 傅粉 *fùfěn*, no equivalent with 打 *dǎ*).

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[86] Lien (1998) points out that in some cases 拍 *phah4* may be an empty lexeme, which loses its substantial meaning and is used only for phonetic reasons, as in 拍拼 *phah4 piann3* 'to do something desperately'.

[87] In TSM there is also the root 創 *chhong3* 'make', which can serve as a dummy verb to make a causative compound verb out of intransitive verbs or adjectives (cf. Lien 1999).

Moreover, in TSM 拍 *phah4* is used with adjectives as well, as illustrated in (97):

(97) 拍長 *phah4 tng5*   '*phah4* + long = lengthen'
      拍鬆 *phah4 sang1*   '*phah4* + slack = slacken'
      拍平 *phah4 pin5*   '*phah4* + flat/level = level'
      拍烏 *phah4 o.1*   '*phah4* + black = blacken'
      拍直 *phah4 tit8*   '*phah4* + straight = straighten'

Differently from TSM, in Mandarin Chinese, usually 打 *dǎ* is not found with adjectives. In fact, as we will see, intransitive deadjectival verbs can causativize by means of other light verbs. However, sentences like the one in (98) are apparently acceptable:

(98) 我们   打宽   了   厨房   门
      wǒmen dǎkuān le   chúfáng mén
      we   widen ASP kitchen door
      'We widened the kitchen door'.

A further examples is given in (99):

(99) 不断   打宽   和   深化   关于   主持人   节目   和
      bùduàn   dǎkuān hé   shēnhuà guānyú zhǔchírén jiémù hé
      continuously widen and deepen about host   program and
      节目   主持人   的 研究   领域
      jiémù   zhǔchírén de yánjiū lǐngyù
      program host   DE research domain
      'Continuously widen and deepen the reseach domain in hosted program and program host'
      (From the PKU corpus)

This can be a residual of former stages of the language, when 打 *dǎ* could be used in combination with adjectives (cf. 85), or may be due to the fact that, with 打 *dǎ* having the function of an *init* head, speakers tend to use it in some cases when other light verbs are normally used[88]. If this is the case, it can be considered as further evidence of the function and development of 打 *dǎ* as a light verb.

The active property of 打 *dǎ* and its wide use as a full verb in the language probably restricts its use as a light verb. In TSM these structures seem to be more widespread than in Mandarin and this is maybe related to the fact that in TSM 拍

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[88] Note that, even though most native speakers I asked judged the form 打宽 *dǎkuān* 'widen' acceptable, some of them judged it dubious or even ungrammatical.

phah4 is more grammaticalized (cf. Chiang 2006). However, what emerges from the above discussion is that 打 *dǎ* (Mandarin), 拍 *phah4* (TSM) and 打 *da2* (Hakka) can all function as causative light verbs, which yield the transitive version of verbs without an [init] feature in their lexical specification, building an extra-layer on top of their structure. These light verbs are the spell-out of the *init*P head and can be considered as the equivalent of the null *init* head responsible for the causative alternation in English lexical causatives. Therefore, if we have a verb specified for [proc] or [proc, res] features in one of these three Sinitic languages, in principle we can causativize it by means of a light verb (100)[89].

(100)

$$
\begin{array}{c}
\textit{init}\text{P} \\
\diagdown \\
\text{DP}_1 \\
\text{打 } \textit{dǎ} \text{ / 拍 } \textit{phah4} \text{ / 打 } \textit{da2} \quad \textit{proc}\text{P} \\
\text{DP}_2 \\
\text{V} \quad \textit{res}\text{P} \\
< \text{DP}_2 > \\
< \text{V} > \quad \text{XP}
\end{array}
$$
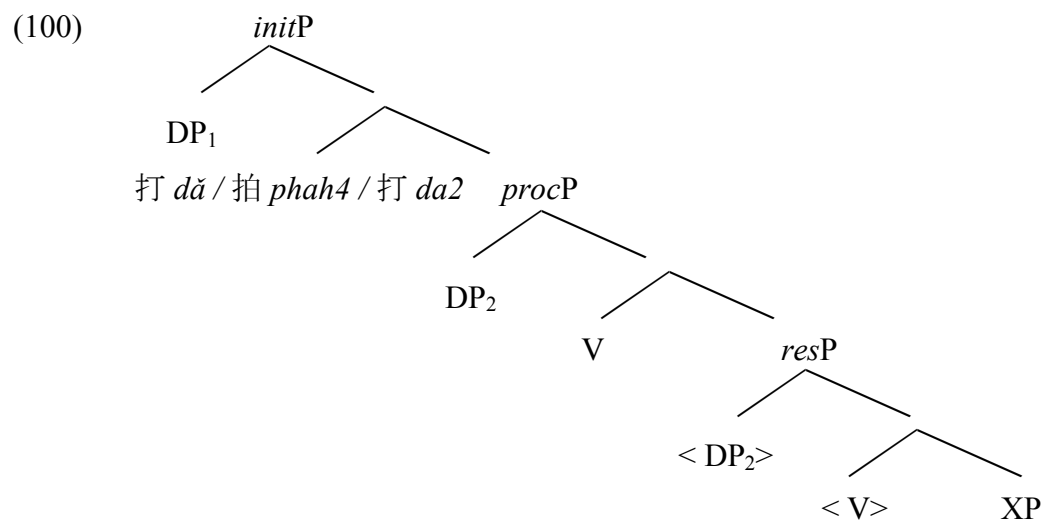
The interesting point about the causative light verbs in the three different Sinitic languages seen above is that they all arise from verbs with the same meaning and the same characteristics. We will argue that their tendency to develop as causative light verbs is due to the presence of certain semantic features in their meaning.

Moreno (1993) proposes that there are three semantic primitives that define causativity. According to him, two of these primitives are Force and Purpose, which have been proposed by Talmy (1985), Song (1990) and Jackendoff (1990). Moreno (1993) adds another semantic feature to the two features just mentioned, i.e. Transition: something (having a property) acquires a new related property in a

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[89] Even though, as we have already stressed, the use of 打 *dǎ* in Mandarin is more restricted, while 弄 *nòng* can be used with almost every verb lacking an [init] feature.

causative event[90]. In order to bring about a transition, an agent or causer must exert a certain force (Force) and he can either have the intention to do that (Purpose, e.g. *I broke the glass*) or lack it (*I accidentally broke the glass*). According to Moreno (1993), while Transition and Force are internal to the process, Purpose is external to it, i.e. it is possible to have a causative process without Purpose but it is not possible to have a causative process without Force and Transition. His prediction is that in the languages of the world causativity may be expressed by affixes or words having at least the two internal semantic primitives in their meanings, i.e. Transition and Force (cf. Moreno 1993:160).

Moreno observes that cross-linguistically verbs expressing the meaning of 'make' tend to develop into markers of causativity. Moreno (1993:156-157) points out that 'make' verbs have three principal uses, i.e. lexical, phrasal and syntactic use. In their lexical use, 'make' verbs are transitive verbs that denote an action that create a new entity as a result, e.g. Eng. *My mother made a dress for me*, Korean 나는 신호합니다 *na-nûn sinho hapnida* 'I:TOP signal make = I make a signal' (from Moreno 1993:156).

In their phrasal use, 'make' verbs can be construed with a noun, an adjective or a verb, forming a complex verb that does not necessarily produce a new entity, e.g. Eng. *I made a walk*, Korean 누가 공부 하세요? *nu-ga gongbu haseyo* 'who:SUBJ study makes = Who studies?'(adapted from Moreno 1993:157)[91]. In its syntactic use, a 'make' verb is devoid of lexical content and it is characterized as a causative element, e.g. Eng. *I made him run*, Korean 은 빌을 죽게 했다 *John-ûn Bill-ûl chug-ge haesda* 'John: TOP Bill: ACC die: COMP made = John caused Bill to die' (adapted from Moreno 1993:157); examples of this kind are very easy to find in many languages.

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[90] Moreno (1993:163, fn.2) clarifies that he applies Transition in the sense of 'become' predicate (Dowty 1979), i.e. a transition between two states that occurs in causative predicates. Pustejovsky (1988) proposes the event-type 'transition': events such as those expressed by *open* cannot be defined unless we propose a transition between two different states: 'not open' vs. 'open'. Moreover, he points out that effective verbs such as *create*, *draw*, *build* too convey a sort of transition, from a state of non-existence to a state of existence, with respect to the effected object.

[91] Moreno points out that in Korean this use is very productive: you can make a transitive or intransitive verbal compound by adding the 'make' verb to virtually every noun.

Moreno (1993:158) notices that the three principal uses of 'make' verbs are derived from a process of progressive abstractive generalization. In its original sense a 'make' verb describes a process in which an agent carries out an action and as a consequence a new object (the "effected object") is created; in this sense it has all the three semantics primitives of causativity, i.e. Force, Transition and Purpose.

The second use of 'make' verbs (the phrasal use) arises with the creation not only of physical objects but also of more abstract entities (the *make* construction creates a process which does not result in the creation of a physical object)[92]; in this sense the 'make' verb has Force and Transition primitives.

Finally, when the effective relationship is extended to events, we have the bringing about of an event and the syntactic causative use arises. In this use, the 'make' verb has Transition, Force and, optionally, Purpose primitives. The process of abstractive generalization would be characterized as follows: creation of a physical object → creation of abstract entities → bringing about of an event[93].

Moreno (1993) predicts that if a 'make' verb in a language lacks one of the internal semantic primitives, it cannot develop a causative meaning. For examples, he proposes that in English the difference between *make* and *do* is that *do* lacks the Force primitive and, thus, did not acquire a causative meaning. Moreno claims the same for Basque and Japanese. For examples the verb *egin* in Basque is a 'do' verb[94], which has the Purpose and Transition semantic primitives, but lacks Force; this would be the reason why it cannot be used as a causative verb. To form a causative construction, *egin* must be used with the affix *-ra-* forming *eragin* (e.g. *lo egin* 'sleep

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[92] The use of the term 'creation of more abstract entities' referring to the phrasal use of these verbs seems to be partially inappropriate to us, since while in some cases you can actually have creation of a more abstract entity, e.g. *make a proposal*, in some other cases they just form processes, as in the case of Eng. *I made a walk*, Basque *lo egin n-u-en* 'sleep make 1:SG:have:PAST = I slept' seen above. In this use the 'make' (or rather 'do', see later on) verb seems to act as a light verb (cf. 4.5.1.1). The same can be said when it is used with adjectives, e.g. Hindi *darvaazsaa band karnaa* 'door closed make' (from Moreno 1993:157). Note that Moreno (1993) glosses *egin* in the Basque example as 'make', however it is closer to English *do* (cf. fn. 94 and the related discussion).

[93] This process of progressive generalization oppose a verb like make to verbs such as build or manufacture, which can only denote a physical process.

[94] This point is a bit ambiguous, because Moreno (2003:156) first give Basque examples with begin as an example of 'make' verbs, e.g. *marrazki-ak egin z-it-u-en* 'drawing:PL make PAST:3PL:have:PAST = He made the drawings' (creation of a physical object), *lo-egin-n-u-en* 'sleep make 1:SG:have:PAST = I slept' (process formed from a noun), but later (p. 160) he maintains that egin is a 'do' verb.

do = sleep' → *lo eragin* 'make sleep'), which, according to Moreno (1993) contributes the Force semantic primitive.

Even though Moreno's (1993) proposal is very interesting, it has some weakenesses. First of all, we do not understand why the verb *do* in English should lack the Force primitive. In fact, Song (1995:214) points out that it is not completely clear what Moreno means with Force and, according to him, *do* too possesses the feature of Force: when X DOES something, X exerts a certain force, as in *I DID swimming in the morning*. Related to this point, Song (1995) stresses the fact that the verb *do* actually was a causative verb from Old English to Middle English (cf. Traugott 1972:121,140). Therefore, we cannot agree with Moreno's (1993) analysis of the difference between *make* and *do* in terms of semantic primitives. While we agree with Song (1995) that *do* has the feature of Force, we are not really convinced that it has Transition, at least in the sense in which it is defined (cf. fn. 90 and the related discussion).

Moreover, Song (1995) highlights that the Korean verb 하 *ha-* literary means 'do' not 'make' and it does not have any effective sense at all (cf. Song 1988)[95]. Therefore, it seems possible for verbs of 'do' as well to develop causative meaning. This point would need further investigation. For the moment being, we assume that Moreno's (1993) prediction that in the languages of the world causativity may be expressed by affixes or words having at least the two internal semantic primitives in their meanings, i.e. Transition and Force (cf. Moreno 1993:160), should not be understood as a restrictive generalization, but as a tendency: items that have at least the Force and Transition semantic primitives are more likely to develop as causative items. Moreover the development of 'make' verbs illustrated with the process of progressive abstractive generalization seems convincing and appealing to us. We will try to illustrate this point with Chinese causative light verbs.

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[95] The same problem arises with its examples from Ịjọ (cf. Moreno 1993:158 and 162). Moreno interprets the verb *mịẹ*, which has a causative use, as 'make', following the gloss provided in Song (1990), who uses the one given in Williamson's grammar (1965). Song (1995) observes that at a closer look to the grammar, it seems to mean 'do' and that probably it is glossed as 'make', since *make* is the most common causative in English.

Going back to the verbs 打 *dǎ* (Mandarin), 拍 *phah4* (TSM) and 打 *da2* (Hakka), we can now try to explain why they have developed a use as causative light verbs. What these three verbs have in common, besides their main lexical meaning, i.e.'hit, beat, strike', is that they all have the sense of 'create, build'. In 4.5.1.1, we have seen that, over time, in Chinese 打 *dǎ* developed the meaning of 'create, build, make', as in 打墙 *dǎ qiáng* 'build + wall = build an earth wall', and with this meaning it is still used in Mandarin Chinese, e.g. 打毛衣 *dǎ máoyī* 'knit a sweater', and also in Hakka, e.g. 打草鞋 *da2 co2 hai5* 'build / weave + straw shoe = to weave straw shoes'. In the same way, 拍 *phah4* in TSM also means 'create, build' (製造物品)[96], as in 拍鎖匙 *phah só-sî* 'build + key = make keys' (cf. 臺灣閩南語常用詞辭典 'A dictionary of frequently used words in Taiwanese Southern Min' (TMCYC): http://twblg.dict.edu.tw/tw/index.htm)[97]. Therefore, 打 *dǎ* (Mandarin), 拍 *phah4* (TSM) and 打 *da2* (Hakka) all have the meaning 'create a physical object' and can be considered as 'make' verbs, characterized by Force, Transition and Purpose.

Moreover, as we have seen, these verbs have another use, not related to the creation of a physical object, e.g. Mandarin 打喷嚏 *dǎ pēntì* '*dǎ* + sneeze = sneeze', 打电话 *dǎdiànhuà* '*dǎ* + telephone = make a phone call'[98]; 打短工 *dǎ duǎngōng* 'do short term jobs'; compare TSM 拍咳嚏 *phah4 ka1 chiunn3* '*phah4* + sneeze = sneeze', 拍水 *phah4 cui2* '*phah4* + water = draw water' and Hakka 打噎琢 *da2 et8 duk8* '*da2* + hiccup = to hiccup', 打賬仔 *da2 zong3 er5* '*da2* + blackmail = to blackmail or extort'. In 4.5.1.1 we have seen that 打 *dǎ* in Chinese began to assume a more flexible and general meaning during the Tang dynasty, undergoing a process of meaning extension, indicating every kind of actions in the 打 *dǎ* + NP construction. The process of abstraction went on and 打 *dǎ* began to be used with even more abstract meaning in 打 *dǎ* +A (e.g. 打硬 *dǎyìng* '*dǎ* + hard = harden') and 打 *dǎ* +V (打折 *dǎzhé* '*dǎ* + snap = snap') constructions (cf. 4.5.1.1).

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[96] This sense of 拍 *phah4*, which is lacking in Mandarin Chinese (拍 *pāi*), is found also in other Sinitic languages, e.g. the Min dialect of Xiamen (福建厦门), 拍 *p'aʔ* 32 and the Yue dialect of Haikang (广东海康), *p'a* 55 (cf. HFDC 1999).

[97] See also 台文/華文線上辭典 'Taiwanese / Chinese on-line dictionary' (TCOD):
http://203.64.42.21/iug/Ungian/SoannTeng/chil/Taihoa.asp

[98] On the progressive abstractive generalization of meaning of 打 *dǎ* in Chinese and related examples, cf. 4.5.1.1.

Therefore, consistently with Moreno's (1993) analysis of 'make' verbs, we claim that the use of these verbs as causative light verbs comes from possessing some particular semantic features, i.e. the semantic primitives of causativity (Force, Transition and Purpose), which derive from their sense of 'create, build, make'. In their causative use, they underwent a further process of generalization, indicating the bringing about of an event, and they can combine only with verbs lacking an [init] feature in their lexical entry. What it is important to stress is that these verbs, differently from English *make*, developed a use as light verbs that can only form causatives from verbs which lack an [init] feature; verbs with the [init] features are apparently excluded from this construction. These verbs cannot be used as syntactic causative verbs and they seem to be able to express direct causation only (cf. chapter 2).

The same considerations hold for the two other light verbs in Mandarin Chinese, i.e. 弄 *nòng* and 搞 *gǎo*. The lexical meaning 弄 *nòng* is 'make, create', e.g. 弄饭 *nòng fàn* 'make food', 弄半导体 *nòng bàndǎotǐ* 'make semiconductors' (cf. HDYC 1999). In this sense, it has all three causative semantic primitives, i.e. Force, Transition and Purpose. Moreover, it can be used in a more abstract sense, e.g. 弄错 *nòng cuò* 'make a mistake', 弄手段 *nòng shǒuduàn* 'play tricks'. Being a 'make' verb endowed with all the causative semantic primitives, its use as a light causative verb is well explained.

As far as 搞 *gǎo* is concerned, its lexical meaning is 'make, do, produce, carry on'. Differently from 弄 *nòng* and 打 *dǎ*, even though it can indicate the creation of a physical object, as in 搞一点核武器 *gǎo yīdiǎn héwǔqì* 'produce some nuclear weapons' (example from the Nciku dictionary), it is generally used to express processes involving more abstract entities, e.g. 搞研究 *gǎo yánjiū* 'do research', 搞关系 *gǎo guānxi* 'make relations', 搞革命 *gǎo gémìng* 'carry on reforms'.

These differences could help to explain some differences of distribution between 弄 *nòng* and 搞 *gǎo* when used with another verb as causative light verbs. Moreover, we can speculate that 打 *dǎ* is more restricted in its use as a causative light verb because it carries on a strong main meaning 'hit, beat, strike' that can often generate ambiguity, as we have mentioned. We will not go further into this point, which would require further investigation.

4.5.2 Transitive deadjectival verbs with 加 *jiā*

In 4.2.1.4 we have seen that deadjectival verbs in Mandarin Chinese are characterized as [proc] / [proc, res] verbs[99]. As other verbs without an [init] feature in their lexical entry, they can causativize by means of a light verb, e.g. 弄 *nòng*. However, some of these deadjectival verbs can become transitive by means of V$_1$s other than those seen in section 4.5. In this section we will show the case of deadjectival verbs with 加 *jiā* 'add; increase' as V$_1$[100] (cf. Steffen Chung 2006), which, according to us, can be considered as a sort of light verb, as we will see. See the examples in (101):

(101) 加宽 *jiākuān* 'increase + wide = widen'
加深 *jiāshēn* 'increase + deep = deepen'
加重 *jiāzhòng* 'increase + heavy = make heavier'
加强 *jiāqiáng* 'increase + strong = strengthen'
加大 *jiādà* 'increase + big = enlarge'
加长 *jiācháng* 'increase + large = lengthen'
加快 *jiākuài* 'increase + fast = speed up'
加高 *jiāgāo* 'increase + high = heighten'
加粗 *jiācū* 'increase + thick/coarse = thicken/coarsen'
加厚 *jiāhòu* 'increase + thick = thicken'
加热 *jiārè* 'increase + hot = heat/warm'

At first sight these seem just normal resultative compounds. However, at a closer look, a number of differences do emerge. First of all, examples as those in (102) show that these verbs are not obligatory telic:

(102)   a. [...] 从   冷藏室   里   取出   的   食物
cóng *lěngcángshì*   *lǐ*   *qǔchū* *de* *shíwù*
from   refrigerator compartement in   take out DE   food
一般   要   加热   15   分钟   以上， 才
yībān *yào*   *jiārè*   *shíwǔ* *fēnzhōng yǐshàng cái*
general will   increase-hot fifteen minute   over   only then
能   彻底   灭杀   细菌。
néng *chèdǐ*   *mièshā*   *xìjūn*
can   thoroughly kill   bacterium
'[...] Normally you should heat the food that you take out from the refrigerator more than fifteen minutes, only then you can thoroughly kill bacteria.'

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[99] Remember also that we have hypothesised that actually these could be considered as items carry on both adjectival and verbal features ([proc, A] / [proc, res, A]; cf. 4.3.2).

[100] According to Steffen Chung (2006:197), another verb, 增 *zēng* 'increase', can be found in these constructions. This verb is often fairly interchangeable with 加 *jiā* 'add; increase'.

(From 加热冷藏食物最少15分钟 'Heat refrigerate food at least for fifteen minutes'; original source 人民网 'The People's net', 23/07/2007, in: http://yhnews.zjol.com.cn/jkpd/ysyy/200707/t20070723_140046.htm)

b. 沸腾　　　　后　　　继续　加热　　　　2　　　小时
   fèiténg　　　*hòu*　　*jìxù*　*jiārè*　　　　*liǎng*　*xiǎoshí*
   boil　　　　after　　go on　increase-hot　two　　hour
   'After boiling, go on heating for two hours'
   (Heater instructions, from:
   www.ceiea.com/.../pt_16724_57490_procontent_comppro.htm)

c. 图　　　　为　　　日前　　　　　工人们　　　正在　　　加宽
   tú　　　　*wéi*　　*rìqián*　　　　*gōngrénmen*　*zhèngzài*　*jiākuān*
   picture　　be　　a few days ago　worker-PL　　ASP　　　increase-wide
   路面
   lùmiàn
   road surface
   'The picture shows workers that were widening the road surface few days ago'
   (From 仙溪镇高塘村至福溪乡公路加宽 'The widening of the road from the Gaotang village of the Xianxi town to the Fuxi village'. In: http://www.patent.gov.cn/newsinfo.Asp?id=544)

d. 他们　加宽　　　　道路　加宽　　　　了　两　天　了, 还　没　完成
   tāmen jiākuān　　*dàolù jiākuān*　　　*le*　*liǎng tiān le*　*hái méi wánchéng*
   they　increase-wide road　increase-wide ASP two　day　FP　yet　not　finish
   'They have been widening the road for two days, they have not finished yet'

e. 他们　昨天　　　开始　加宽　　　　路面，　　　到　今天　还　没
   tāmen zuótiān　*kāishǐ jiākuān*　　*lùmiàn*　　　*dào*　*jīntiān*　*hái*　*méi*
   they　yesterday　start　increase-wide road surface　until　today　still　not
   结束。
   jiéshù
   finish
   'They started to widen the road surface yesterday, but up to now they haven't finished yet.'

Moreover, they apparently allow the aspect marker 着 *zhe* (durative), which, as we have seen in 4.3.2, is generally found with activities and SLSs, but is strictly incompatible with achievements, while with accomplishments it can generally appear only in combination with the progressive aspect marker 在 *zài* (在 *zài*...着 *zhe*), forming a complex viewpoint which signals "a continuation of a progressive activity". Therefore, as shown in the examples in (103), these verbs seem to behave atelically.

(103) a. 这　一切　　都　加深　着　加重　　　　着　他们
      zhè yīqiè　*dōu jiāshēn zhe jiāzhòng*　　*zhe tāmen*
      this all　　all　deepen ASP increase-heavy　ASP they

相依为命　　　　　　　　　　　的　感觉
xiāngyīwéimìng　　　　　　*de*　*gǎnjué*
depend on each other for survival DE feeling
'All this is deepening and making heavier the feeling of depending on each other for life'
(From PKU corpus)

b. 对　丑类　　　的 恨 加深　　　着 对　人民　　　的　　爱
duì　*chǒulèi*　*de hèn jiāshēn*　*zhe duì*　*rénmín*　*de*　　*ài*
PREP evil person DE hate increase-deep ASP PREP the people DE　　love
'The hate for evil people is deepening the love for the people'
(From PKU corpus)

c. 现代　　科技　　　　极大地　　　加快　　　着　社会
xiàndài　*kējì*　　*jídà-de*　*jiākuài*　　*zhe*　*shèhuì*
modern　technology extreme-ADV increase-fast ASP　society
生活　　　节奏
shēnghuó jiézòu
life　　　　rhythm
'Modern technology is extremely accelerating the life rhythm of the society'
(From PKU corpus)

d. 她们　加强　　　　　着　对　音乐　的　　理解
tāmen jiāqiáng　　*zhe duì*　*yīnyuè de*　　*lǐjiě*
they　increase-strong ASP PREP　music　DE　　understand
'They are strengthening their understanding of music'
(Google search, August 2009)

e. 北京　现在　以　每年　　拆　　　600　　　条　胡同　　的
Běijīng xiànzài yǐ　měinián　chāi　liùbǎi　　tiáo hútòng de
Beijing now　　PREP every year dismantle six hundred CL　alley　　DE
速度　　在　加宽　　　着　道路
sùdù　　*zài jiākuān*　　*zhe dàolù*
speed　ASP　increase-wide　ASP　road
'At present, Beijing is widening the roads by dismantling six hundred alleys per year'
(Google search, August 2009)

f. 而 壮大　　的 气流　也 同时　　　　在　继续　　加宽
ér zhuàngdà de qìliú　yě tóngshí　　zài jìxù　　jiākuān
and expand　DE airflow too at the same time ASP continue increase-wide
着 体内　　的 经脉
zhe tǐnèi　　*de jīngmài*
ASP internal DE blood vessels
'And the expanded airflow too at the same time continues widening the internal blood vessels'
(From the novel 魔神傲视 'Disdain for a meaningless ritual' by Kuang Longshang:
http://www3.2100book.com/files/article/fulltext/111/111514.html)

In contrast, as pointed out by Yong (1997), resultative compounds cannot occur with the aspect marker 着 *zhe* (cf. also Xiao & McEnery 2004), e.g. *喝醉着 *hēzuì*

zhe 'drink-drunk ASP', *吃饱着 *chībǎo zhe* 'eat-full ASP'. In fact, these verbs entail the attainment of a result, which, as we have seen, is incompatible with the durative aspect marker. See the examples in (104), adapted from Yong (1997:10).

(104) a. *那 个   人   洗干净   着   衣服
          nà   *ge*   *rén*   *xǐgānjìng*   *zhe* *yīfu*
          that CL   person wash-clean ASP clothes
          'That person is washing the clothes clean'
          *那 个   人   打破   着   窗子
          nà   *ge*   *rén*   *dǎpò*   *zhe* *chuāngzi*
          that CL   person hit-break   ASP window
          'That person is hitting the window broken'

Therefore, it clearly appears that the verbs with 加 *jiā* 'add; increase' as V₁ we are considering here cannot be considered resultative compounds. Moreover, if we look at this issue also from the point of view of the meaning, the difference with resultative compounds seems to be clear: in a sentence like 他们加宽了路面 *tāmen jiākuān le lùmiàn* 'they increase-wide ASP road surface = they widened the road', clearly the meaning is not 'they increase the road and as a result the road widened' but rather 'they increased the length of the road' (cf. also Steffen Chung 2006:196). Therefore, they should be considered as transitive deadjectival verbs, where 加 *jiā* is a causative light verb, which forms the transitive version of deadjectival verbs (c.f. 4.3.1). Note also that the subjects appearing with complex deadjectival verbs with 加 *jiā* 'add; increase' are not necessarily agents, but also other kinds of causes (see the examples in 103). As their intransitive counterparts, they can occur with overt linguistic material, such as measure phrases, which explicitly identify a bounded measure of change, creating a telic situation, as in the examples in (105).

(105) a. 我们 加宽   了 路面   一   米   之   多
          wǒmen *jiākuān*   *le* *lùmiàn*   *yī*   *mǐ*   *zhī* *duō*
          we   increase-wide ASP road surface one   meter PART many
          'We widened the pavement one meter'
       b. [...] 每   门 加宽   3 0 至   5 0 厘米 [...]
          měi   *mén* *jiākuān* *sānshí* *zhì*   *wǔshí* *límǐ*
          each   door increase-wide thirty to   fifty centimetre
          '[...]Each door has been widened thirty to fifty centimetres [...]'
          (From the PKU corpus)
       c. [...] 可   加长   到   3 9 0 0   mm   左右 [...]
          kě   *jiācháng*   *dào* *sānqiānjiǔbǎi*   *zuǒyòu*
          can   increase-long up to 3900   mm   more or less

'[...] Can be increased up to 3900 mm more or less [...]'
(From the PKU corpus)

d. [...] 因为　　　　液体　加热　　　　到　　一定　的　　　程度
    yīnwèi　　　　*yètǐ jiārè*　　*dào*　*yīdìng de*　*chéngdù*
    because　　　　liquid increase-hot　up to　fixed　DE　degree

    才　　　会　　沸腾 [...]
    cái　　　*huì*　　*fèiténg*
    only then　will　boil

'[...] Because the liquid will start to boil only after it has been heated to a
specified temperature [...]'
(From the PKU corpus)

e. 我　把　水　　加热　　　　　了 到　　100　　　　度
  wǒ bǎ shuǐ　*jiārè*　　　　*le dào*　*yībǎi*　　*dù*
  I　BA　water　increase-hot　ASP up to　one hundred　degree
'I heated the water up to one hundred degrees'

We would like to make a brief remark on the form of these verbs. Hay, Kennedy & Levin (1999:132) claim that degree achievement verbs are events that describe the change underwent by an object with respect to the gradable property introduced by the base adjective. Hay, Kennedy & Levin (1999) introduce a function INCREASE (encoded in English by *-en* or by a ∅ morpheme), which takes a gradable adjective meaning and returns a description of an event involving some property undergoing a change in its degree.

According to Hay, Kennedy & Levin (1999:132), the logical representation of these verbs would be as follows:

(106) [[INCREASE (Ø) (*x*) (*d*) (*e*)]] = 1 iff Ø (*x*) (SPO (*e*) + *d* = Ø (*x*) (EPO (*e*))
"INCREASE ((Ø) (*x*) (*d*) x)(d) is true of an event *e* just in case the degree to which *x* is Ø at the beginning of the event plus *d* equals the degree to which *x* is Ø at the end of the event; i.e. just in case *x* increases in Ø-ness by *d*. This measure of change corresponds to the difference value."

An illustration of this analysis is represented in (107b), which represents the logical representation of the sentence in (107a) (cf. Hay, Kennedy & Levin 1999:132):

(107) a. *Kim lengthened the rope*
    b. ∃ e,d [increase (long (rope)) (d) (e)]

According to the logical representation in (107b), the sentence *Kim lengthened the rope* is true if the length of the rope at the end of the increasing event equals its length at the beginning plus some unspecified degree of length.

Hay, Kennedy & Levin (1999) assume that the logical representation in (106) is the one underlying both transitive and intransitive degree achievement verbs. Obviously, the two kinds of forms differ for the presence or absence of a causative component. However, they observe that the exact analysis of the causative component is not central to what they intend to represent; furthermore they are not sure whether, in the analysis of the causative alternation represented by intransitive/transitive pairs (*The soup cooled* vs. *I cooled the soup*), the causative component should be included in both the transitive and the intransitive forms (e.g. L&RH 1995) or only in the transitive one (e.g. Hale & Keyser 1986, Hoekstra 1992 and 2004, Ramchand 2008; cf. 2.4.2). Therefore, they put aside this question and, for the sake of simplicity, omit the external argument and the causative component from the logical representation.

In Chinese transitive deadjectival verbs with 加 *jiā* as V₁, the latter seems to be the spell out of one of the relevant parts of the logical representation, i.e. the increasing event. Therefore, following Hay, Kennedy & Levin's (1999) proposal, the representation of the event expressed by the sentence in (108a) would be as in (108b):

(108) a. 我们　　加宽　　　　了　路面
　　　　wǒmen jiākuān　　le　lùmiàn
　　　　we　　increase-wide　ASP　road surface
　　　　'We widened the road surface'
　　b. ∃ e, d [加 *jiā* 'increase' (宽 *kuān* 'wide' (路面 *lùmiàn* 'road surface')) (d) (e)]

However, as we have seen, 加 *jiā* is present only in the transitive form, thus, along with the increasing event, it also represents the causative component. Therefore, 加 *jiā* 'increase' can be considered as a special light verb which builds (and marks) the transitive form of deadjectival verbs, as shown in (109).

(109)
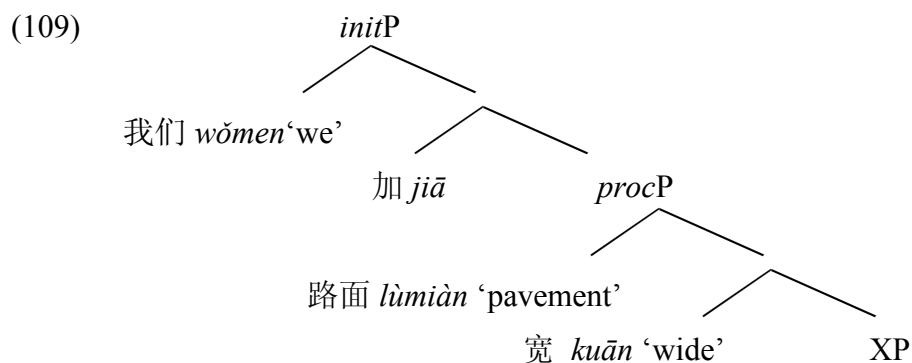
However, it should be noted that 加 *jiā* 'increase' cannot be added freely to any deadjectival verb to form its transitive counterpart. After a closer look (cf. exx. 101), what seems to emerge is that 加 *jiā* 'increase' can be added only to those deadjectival verbs related to open-range adjectives, more precisely to those involving an increase in the property denoted by the adjective. In contrast, 弄 *nòng* 'make' can be added to virtually any deadjectival verb, even though in some cases it seems to convey a colloquial flavour (cf. the 文林 *Wenlin dictionary*); nevertheless, with most deadjectival verbs based on open-range ('increasing') adjectives, 加 *jiā* 'increase' seems to be preferred[101]. However, 加 *jiā* 'increase' cannot be found with deadjectival verbs based on closed-range adjectives, which would require the use of 弄 *nòng* 'make' (110)[102].

(110)	弄干	*nònggān*	'make + dry = dry'
	弄干净	*nònggānjìng*	'make + clean = clean'
	弄空	*nòngkōng*	'make + empty = empty'
	弄湿	*nòngshī*	'make + wet = wet'
	弄脏	*nòngzāng*	'make + dirty = make dirty/soil'
	弄平	*nòngpíng*	'make + flat = flatten'

As we have seen, Hay, Kennedy & Levin (1999) characterize the gradual change involved in degree achievement verbs as an increase in degree to which an object possesses a gradable property (cf. also Kennedy & Levin 2002). However, Kennedy & Levin (2002) note that verbs like *shorten* could be seen as involving a decrease in some property, i.e. a decreasing change that involves an increase in negative

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[101] Note that, for some of these deadjectival verbs, the native speakers I asked do not accept the version with 弄 *nòng*, but only the one with 加 *jiā*, e.g. ?弄热 *nòngrè* 'make-hot' vs. 加热 *jiārè* 'heat'.

[102] Recall that Rothstein (2008a) points out that a verb like *cool* means 'undergo a decrease in temperature' (cf. also Hay, Kennedy & Levin 1999) and not 'get a value in the cool range' (cf. 4.3.3). In contrast, *become cool* means 'get to have a temperature value in the (contextually determined) cool range', without specifying the direction of change: e.g. *When I took the soup out of the fridge it was so cold that it burned my mouth, but after some time at room temperature, it had become pleasantly cool/*it had cooled* (Rothstein 2008a:192). Following Rothstein's (2008a) claim, we wonder whether there is a difference between complex deadjectival verbs formed with 加 *jiā* 'increase', on the one hand, and complex deadjectival verbs formed with 弄 *nòng* 'make', on the other hand. Accordingly, while deadjectival verbs formed with 加 *jiā* 'increase' would specify the direction of change, meaning 'cause an increasing in a certain property', without specifying a value, deadjectival verbs formed with 弄 *nòng* 'make' would specify a value in the property range, without specifying the direction, meaning 'cause to have the value X in the property range'. If this were the case, then a verb like 加高 *jiāgāo* 'increase + high' would mean 'cause an increase in height', while 弄高 *nònggāo* would mean 'make sth. higher/cause sth. to become higher'. Further investigation and data are needed in order to gain a better understanding of this issue.

properties. Nevertheless, they assume that a change in the degree to which an object possesses some (gradable) property should involve an increase, either of a positive or of a negative degree[103].

What seems interesting is that Chinese deadjectival verbs denoting a decrease in some property (increase in negative properties) in their transitive form require a V_1 that marks the negative direction of the change in degree, e.g. 减 *jiǎn* 'decrease, subtract' and 缩 *suō* 'shrink', as in the examples in (111), from Steffen Chung (2006:197-198).

(111) 减弱 *jiǎnruò* 'decrease + weak = weaken'
　　　减短 *jiǎnduǎn* 'decrease+ short = shorten'
　　　减小 *jiǎnxiǎo* 'decrease + small = reduce in size (make smaller)'
　　　减低 *jiǎndī* 'decrease + low = reduce, lower'
　　　减轻 *jiǎnqīng* 'decrease + light = lighten'
　　　减慢 *jiǎnmàn* 'decrease + slow = slow down'
　　　缩短 *suōduǎn* 'shrink + short = shorten'
　　　缩小 *suōxiǎo* 'shrink + small = reduce, narrow (make smaller)'

Steffen Chung (2006) observes that 减 *jiǎn* 'decrease, subtract' and 缩 *suō* 'shrink' may be used in quite different contexts, often depending on the specific semantic context or environment[104]. This issue would need more investigation, but for the moment we assume that these kinds of verbs too can be considered as a sort of light verbs which form the transitive version of deadjectival verbs based on open-range adjectives involving a decrease in the property denoted by the adjective. This issue deserves further investigation, thus we will leave it for further research.

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[103] "Assume that change involves a shift from ¬P to P [...] If an object possesses a gradable property P to degree d, then for any d < d, that object also possesses property P to degree d. Therefore, change in the degree to which an object possesses some gradable property should involve an increase (of a positive or negative degree)" (Kennedy & Levin 2002:7).

[104] Note that there does not seem to be any particular requirement on the kind of subjects which can occur with these V_1s: not only agents, but also other kinds of causes seem to be able to appear as subjects. See the following examples, which show non-agentive causers:

a. 血小板　　　　　减小　　　　症
　xiěxiǎobǎn　　*jiǎnxiǎo*　　*zhēng*
　blood platelet　　reduce　　　disease
　'The bloody platelets reduce the disease'
　(From the PKU corpus)

b. 酒精　　会　　严重　　缩短　　　寿命
　jiǔjīng　*huì*　*yánzhòng*　*suōduǎn*　*shòumìng*
　alcohol　can　serious　shorten　　life
　'Alcohol can seriously shorten life'
　(From the Nciku dictionary)

4.5.3 Transitive verbs with a light V₁ surfacing as intransitives

Chinese deadjectival verbs with a light V_1 in some cases can surface as intransitives, as in the examples in (112), from the PKU corpus; we assume that they involve agentivity or, better, the presence of an Initiator, and that they should be considered as some sort or middles or pseudo-passives (cf. Cheng & Huang 1994, Ting 2003, Chiang 2006), rather than unaccusatives.

(112) a. 机舱　　　加宽　　　了
            jīcāng　　*jiākuān*　　*le*
            cabin　　　increase-widen ASP
            'The cabin (was) widened'
     b. 墙纸　　　弄脏　　了
            qiángzhǐ　*nòngzāng le*
            wallpaper　make dirty ASP
            'The wallpaper (was) made dirty'
     c. 报纸　　　都　　弄湿　　了
            bàozhǐ　　*dōu*　*nòngshī*　*le*
            newspaper　all　make wet ASP
            'The newspaper (was) wetted'

Following previous works on resultatives surfacing as intransitives (cf. Sybesma 1999, Cheng & Huang 1994, Ting 2003), we have excluded that these sentences involve a topicalized object and a *pro* subject (cf. also Cheng 1989)[105]. We consider the sentences in (112) as surface ergatives (cf. Cheng & Huang 2004), because, differenty from deep or true ergatives, they entail the existence of an implicit Initiator, as we will see; Keyser & Roeper (1984) point out that while surface ergatives

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[105] For example, these sentences are natural without the pause that generally characterizes sentences with a topic (cf. Sybesma 1999). Moreover, Cheng & Huang (1994:211), on the basis of a difference between relativization and topicalization observed by Huang (1991) and Ning (1993), according to whom a relativized structure requires that the relative operative binds into a syntactic position in the relative clause, point out contrasts like: a. *手帕哭湿了的人来了 *shǒupà kū shī le de rén lái le* 'hankerchief cry-wet ASP DE person come FP = the person such that the handkerchief was cried-wet came' vs. b. 哭湿了手帕的人来了 *kū shī le shǒupà de rén lái le* 'cry-wet ASP hankerchief DE person come ASP = the person who cried and made the handkerchief wet came'. Cheng & Huang point out that grammatical cases, like the one in (b), are those where the resultative compounds are used transitively, with the subject bound by the relative operator (的 *de*). In the ungrammatical cases, like the one in (a), which according to them involve middles, relativization is impossible, since nothing is syntactically bound by the relative operator. They further highlight that if cases like those in (a) could be analysed as involving topic structures, then an Agent position would still be open to be relativized, and their ungrammaticality would be unexplained. The same contrast seems to hold also for the complex verbs with a light V₁ which we are considering here, as it emerges from native speakers' judgment: e.g. 加宽了路面的人来了 *jiākuān le lùmiàn de rén lái le* 'widen ASP road DE person come ASP = the people who widened the road came' vs. *路面加宽了的人来了 *lùmiàn jiākuān le de rén lái le* 'road widen ASP DE person come ASP'. We will not go further into this issue; for arguments and other evidence against a topic analysis, the reader may refer to the above mentioned works.

(middles) arise from the suppression of their agents, deep ergatives are ergatives both underlyingly and on the surface, and are underlyingly subjectless (cf. Cheng & Huang 1994:213). Therefore, these forms share an important property with passives (when their agent phrases are unexpressed): as we have seen, a passive sentence presupposes the suppression of the Initiator role, which nevertheless remains implicit (cf. Reinhart & Siloni 2005).

We prefer the term pseudo-passive for the Chinese cases just illustrated for several reasons. First of all, English middles typically occur in generic sentences and indicate a generic situation, e.g. *this book sells easily*, and are often accompanied by adverbs like *easily*. The restrictions found with English middles are not found in the Chinese cases just seen above (cf. Cheng & Huang 1994, Chiang 2006). However, Chinese has some constructions that can be considered as the equivalent of middles (113) (cf. also Chiang 2006 for possible examples of middle constructions in Taiwanese Southern Min).

(113) a. 瓷器　　容易　打碎 (cf. ex. 76)
　　　　cíqì　　*róngyì*　*dǎsuì*
　　　　porcelain　easy　　break
　　　　'Porcelain breaks easily'
　　　b. 这 套　　房子　很　　容易　加热
　　　　zhè tào　*fángzi hěn*　*róngyì jiārè*
　　　　this CL　house　very　easy　increase-hot
　　　　'This house heats easily/is easy to heat'
　　　　(From the Nciku dictionary:
　　　　http://www.nciku.com/search/all/examples/%E5%8A%A0%E7%83%AD?
　　　　pageNo=2)

However, as Rapoport (1999) points out, it is not the case that all middles imply agentivity, as dimonstrated by the examples in (114), from Rapoport (1999:150-151).

(114) a. *This kind of glass breaks easily all by itself.*
　　　　b. *Milk chocolate melts smoothly all by itself.*
　　　　c. *These heavy windows open easily all by themselves.*
　　　　　　　　　　　　vs.
　　　　d. **This kind of bread cuts easily all by itself.*
　　　　e. **This wood carves easily all by itself.*
　　　　f. **This ice crushes easily all by itself.*

The examples in (114a-c) involve middles formed from unaccusative verbs, and thus they do not imply agentivity, as it is confirmed by their ability to appear with the phrase *all by itself* (this adverbial is excluded in sentences 114d-e, which involve an

implicit agent). Therefore, it is not the case that the English Middle construction in itself implies agentivity, but rather agentivity depends on the kind of verb involved in the construction (cf. Rapoport 1999:154). Middles formed from agentive verbs, despite their surface ergativity, imply agentivity and thus are not deep ergatives.

For the reasons briefly illustrated above, we prefer to use the term pseudo-passive for the examples seen in (112). As a matter of fact, these examples seem to presuppose the suppression of the Initiator role, which nevertheless remains implicit, as in the case of a true passive, even though in passive sentences the presence of an Initiator which causes the event is strongly stressed and implied by the presence of the marker 被 *bèi*, which introduces the Initiator (although the Initiator can be omitted in the sentence). Apparently, sentences involving pseudo-passives can be paraphrased with their passive counterpart with the marker 被 *bèi*, which confirms that they entail the presence of an implicit Initiator. This seems to be true for all verbs formed with a light V_1 (cf. Chiang 2006). See the examples in (115):

(115) a. 路面　　　　加宽　　　　了
　　　　lùmiàn　　　*jiākuān*　　*le*
　　　　road surface　increase-widen　ASP
　　　　'The road surface (was) widened'
　　a[i]. 路面　　　　被　　加宽　　　　了
　　　　lùmiàn　　　*bèi*　　*jiākuān*　　　*le*
　　　　road surface　PASS　　increase-widen　ASP
　　　　'The road surface was widened'

　　　b. 水　　弄干　　了
　　　　shuǐ　*nònggān*　*le*
　　　　water　make-dry　ASP
　　　　'The water (was) dried'
　　b[i]. 水　　被　　弄干　　了
　　　　shuǐ　*bèi*　*nònggān*　*le*
　　　　water　PASS　　make-dry　ASP
　　　　'The water was dried'

　　　c. 铁　加热　　　　了
　　　　tiě　*jiārè*　　　*le*
　　　　iron　increase-hot　ASP
　　　　'The iron heated (was heated)'
　　c[i]. 铁　被　　加热　　　　了
　　　　tiě　*bèi*　*jiārè*　　　　*le*
　　　　iron　ASP　　increase-hot　ASP
　　　　'The iron was heated'

d. 骨头　　　　弄断　　　　　　了
   gútou　　　 *nòngduàn*　　 *le*
   bone　　　 make-break　 ASP
   'The bones broke (were broken)'

d[i]. 骨头　　　被　　弄断　　　　　　了
   gútou　　 *bèi*　 *nòngduàn*　　 *le*
   bone　　 PASS　 make-break　　 ASP
   'The bones were broken'

e. 玻璃门　　　打碎　　　　　　　　　了
   bōlímén　 *dăsuì*　　　　　　 *le*
   glass door　 hit-smash into pieces　 ASP
   'The glass door (was) smashed into pieces'

e[i]. 玻璃门　　　被　　打碎　　　　　　　　了
   bōlímén　　 *bèi*　 *dăsuì*　　　　　　 *le*
   glass door　 PASS　 hit-smash into pieces　 ASP
   'The glass door was smashed into pieces'

In contrast, Cheng & Huang (1994:212) point out that pure ergatives are not (near-)synonymous with their passive counterparts and cannot be paraphrased with them, as shown in the examples in (116) from Cheng & Huang (1994:212).

(116)　a. 张三　　　　醉倒　　　了
   Zhāngsān　 *zuìdào*　　 *le*
   Zhangsan　 drunk-fall　 ASP
   'Zhangsan was so drunk that he fell.'

　　　b. 张三　　　被　　醉倒　　　　了
   Zhāngsān　 *bèi*　 *zuìdào*　　 *le*
   Zhangsan　 PASS　 drunk-fall　　 ASP
   'Zhangsan was made so drunk as to fall.'

The sentences in (116a) involves an intransitive resultative compound formed with an unaccusative V₁ and describes a pure change of state: Zhangsan got tired to death; there is no presence of a causing event, no initiator is involved; the predicate is unaccusative. In contrast, (116b) is a passive sentence which involves the presence of a causing event; the initiator is disabled but is not eliminated: there is the presence of some external cause which made Zhangsan get so drunk as to fall. The passive sentence is derived from a causative structure, like: 那瓶酒醉倒了李四 *nà píng jiŭ zuìdào le Lĭsì* 'that CL (bottle) wine　 drunk-fall ASP Lisi = that bottle of wine made

Lisi drunk and fell' (cf. Cheng 1997:176; cf. 6.3.2.5)[106]. Therefore, the example (116a) is not (near-)synonymous with (116b).

Moreover, sentences like the one in (117), with a purpose clause, which involves control and is not possible with unaccusatives, are apparently acceptable, and this seems to further reveal the implicit presence of an Initiator:

(117) 为了　　优化　　交通　　环境　　一些　路面　加宽　　　了
wèile　yōuhuà　jiāotōng　huànjìng　yīxiē　lùmiàn　jiākuān　le
in order to optimize　traffic　situation　some　road　widen　ASP
'In order to optimize the traffic situation, some roads (have been) widened'.

According to the informants we consulted, the sentence in (117) can be paraphrased with its passive counterpart with the passive marker 被 *bèi* (cf. ex. 115), and thus (117) and (118) should be considered as (near-)synonymous[107].

(118) 为了　　优化　　交通　　环境　　一些　路面　被　加宽　了
wèile　yōuhuà　jiāotōng　huànjìng　yīxiē　lùmiàn bèi　jiākuān　le
in order to optimize　traffic　situation　some　road　PASS　widen　ASP
'In order to optimize the traffic situation, some roads have been widened'.

Chiang (2006), examining complex verbs formed with a light V_1 in Taiwanese Southern Min, points out that a proof of the fact that (when used intransitively) they are pseudo-passive rather than unaccusatives is given by the fact that they are not acceptable with the adverbial 家己 *ka1-ki7* (Mandarin 自己 *zìjǐ*) 'by itself' (on this test applied to Mandarin resultatives, cf. Tang 2002, Ting 2003, see also 4.5.1.2 above). The Mandarin examples in (119), adapted from Ting (2003:17), show that only pure

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[106] We want to stress the fact that this causative structure is different from regular causative alternations (e.g. *break* (intr.) - *break* (tr.)), which seems to be confirmed by the fact that there are precise restrictions on the kind of subjects that can be appear as causes (for example, it cannot take an agent as subject; cf. Huang H.C. 2006:28 and chapter 6, ex. 75). Therefore, this sentence should be rather considered as a derived causative formed by adding external causes, which have to conform to particular restrictions. We will deal with this issue in 6.3.2.5.

[107] Cases like the one in (a) below seem to be more complicated; in (a) the compound 加宽 *jiākuān* 'widen' seems to be used intransitively but with an instrumental (which is not possible with unaccusatives). However, according to some native speakers I asked, the sentence would be equivalent to a passive one, which would make it a pseudo-passive, but according to others it would imply a non-expressed (*pro*) subject, thus 路面 *lùmiàn* 'road surface' would be a topic object.

(a) 路面　　用　　挖土机　　　　加宽　了
lùmiàn　yòng　wātǔjī　　jiākuān le
road surface　use　excavator　　widen　ASP
'The road surface (was) widened with the excavator' / 'The road surface, (they) widened (it) with the excavator'.

ergatives (119a) allow the use of 自己 *zìjǐ* 'by itself', while surface ergatives do not (119b):

(119) a. 奶油　　　自己　融化　　了
   nǎiyóu　　*zìjǐ*　*rónghuà*　*le*
   butter　　self　melt　ASP
   'The butter melted by itself.'
  b. *书　　　自己　买掉　　了
   shū　　*zìjǐ*　*mǎidiào le*
   book　　self　sell-fall ASP
   'The book was sold by itself.'

This test, applied to Mandarin Chinese transitive verbs formed with a light V_1, seems to confirm the hypothesis that they are pseudo-passives, i.e. when they surface as intransitives they imply the presence of an Initiator; thus they do not allow the adverbial 自己 *zìjǐ* 'by itself' (120a-d). In contrast, unaccusative verbs allow the occurrence of 自己 *zìjǐ* 'by itself' without problems (120 a[i]-d[i]).

(120) a. *树枝 自己 打断　　了　　　a[i].树枝　　　自己　　断　　了
   shùzhī zìjǐ dǎduàn　*le*　　*shùzhī*　　*zìjǐ*　*duàn*　*le*
   branch itself break　ASP　　branch　　itself　break　ASP
   'The branches broke by themselves' 'The branches broke by themselves'
  b. *水　自己 弄干　　了　　b[i].水　　　自己　干　　了
   shuǐ zìjǐ　*nònggān*　*le*　　*shuǐ*　　*zìjǐ*　*gān*　　*le*
   water itself dry　　ASP　　water　　itself　dry　　ASP
   'The water (was) dried by itself'　'The water dried by itself'

  c. *缝　自己 加宽　　了　　c[i]. 缝　　　自己　宽　　了
   fèng zìjǐ jiākuān　*le*　　*fèng*　　*zìjǐ*　*kuān*　*le*
   crack itself widen　ASP　　crack　　itself　wide　ASP
   'The crack (was) widened by itself' 'The crack widened by itself'
  d. *铁　自己 加热　　了　　d[i].铁　　　自己　热　　了
   tiě zìjǐ jiārè　*le*　　*tiě*　　*zìjǐ*　*rè*　　*le*
   iron　itself heat　ASP　　iron　　itself　widen　ASP
   'The iron (was) heated by itself'　'The iron heated by itself'

Summing up, we have shown that verbs formed with a light *init* (causative) verb, when surface as intransitives, are not unaccusatives, but rather pseudo-passives, since an initiator seems to be always implied. As a matter of fact, these verbs are (near-) synonymous of their passive counterpart. Moreover, they can be used with a purpose clause, which involves control; this seems to suggest the implicit presence of an initiator. Finally, they cannot appear with the adverbial 自己 *zìjǐ* 'by itself' ('without

outside help'). Verbs with a causative light V₁ represent the transitive (causative) variant of inchoative verbs, forming causative alternations, e.g. 破 *pò* 'break' (intr.) / 弄破 *nòngpò* 'break' (tr.); 宽 *kuān* 'widen' (intr.) / 加宽 *jiākuān* 'widen' (tr.).

Since in causative verbs with a light V₁ the presence of an *init* component is made explicit by the presence of the light verb, which we have assumed to be the spell-out of the *init*P layer, it seems to be clear that, while the Initiator role can be syntactically suppressed, it nevertheless remains implicit, given the explicit presence of the *init* component. It would be exactly the presence of the causative *init* light verb to exclude unaccusativity for these verbs. In line with the analysis proposed by Cheng & Huang (1994:207-208), we assume that pseudo-passive forms are derived through the suppression of the Initiator role, followed by NP-movement, which allows the Undergoer to surface as a subject (121).

(121)
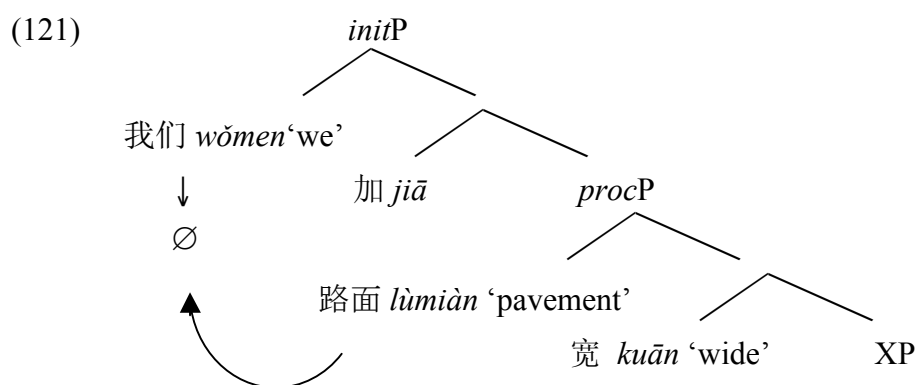
4.6 Deadjectival verbs with 化 *-huà*

In this section, we would like to introduce the issue of deadjectival verbs formed with the suffix 化 *-huà*, in order to compare these forms with those containing a light verb, seen in the previous section.

The suffix 化 *-huà* belongs to the small group of items whose affixal status is generally recognized by authors (for an overview on the topic, cf. Pan, Ye & Han 2004, Arcodia 2008). It is generally agreed that this suffix represents the equivalent of suffixes found in the European languages, e.g. *-ize, -ify*. See the examples in (122)[108].

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[108] It should be noted that most of these derived words can be used both as nouns and as verbs, e.g. 现代化 *xiàndàihuà* 'modernize / modernization', 工业化 *gōngyèhuà* 'industrialize / industrialization', 沙化 *shāhuà* 'desertify / desertification'.

(122)　現代化　　*xiàndàihuà*　'modern times + SUFF = modernize'
　　　　工业化　　*gōngyèhuà*　'industry + SUFF = industrialize'
　　　　革命化　　*gémìnghuà*　'revolution + SUFF = revolutionize'
　　　　沙化　　　*shāhuà*　'desert + SUFF = desertify'
　　　　数字化　　*shǔzìhuà*　'digit + SUFF = digitalize'
　　　　知识化　　*zhīshihuà*　'knowledge + SUFF = intellettualize'
　　　　欧化　　　*Ōuhuà*　'Europe + SUFF = Europeanize'
　　　　绿化　　　*lǜhuà*　'green + SUFF = make green...afforest'

This suffix is claimed to have been imported from European languages, through the mediation of Japanese[109], in the period of the May Fourth Movement (1919; cf. Wang 1980 [1957-1958]). Later on, 化 -*huà* developed independently in Chinese and became very productive; it began to be used not only to translate foreign terms for which a Chinese equivalent did not exist, but also to create new words independently (cf. Steffen Chung 2006:202)[110].

When 化 -*huà* is used with adjectival bases, it can correspond either to English suffix -*ify* or -*en*, as in the examples in (123).

(123)　硬化 *yìnghuà*　'hard + SUFF = harden'
　　　　软化 *ruǎnhuà*　'soft + SUFF = soften'
　　　　美化 *měihuà*　'beautiful + SUFF = beautify'
　　　　净化 *jìnghuà*　'clear + SUFF = purify'
　　　　强化 *qiánghuà*　'strong + SUFF = strengthen'
　　　　恶化 *èhuà*　'evil + SUFF = worsen'
　　　　丑化 *chǒuhuà*　'ugly + SUFF = vilify'

In the examples above, the suffix 化 -*huà* forms deadjectival verbs. Its meaning, 'make A', indicating the process of 'make becoming A', seems linked to the

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[109] Starting from mid-XIX century many Western concepts were first introduced in Japanese and later adopted in China (cf. Masini 1993, Wang 1980 [1957]). Loans from Japanese are particularly convenient since the two languages share the writing system; more precisely Japanese uses characters borrowed from Chinese centuries ago, associating different pronunciations to them.

[110] According to Masini (1993), Japanese first borrowed the suffix 化 -*huà* from Chinese and later (in the XX century) Chinese re-introduced it in its lexicon, with the new function derived from its use in Japanese, and began to use it to translate words of foreign origin. According to Arcodia (2008), the Japanese influence is evident from its productivity with polysyllabic bases (which is in contrast with the tendency of Chinese to towards disyllabism, cf. Masini 1993). Steffen Chung (2006:203) notes, indeed, that in contrast with most complex words in Chinese, 化 -*huà* suffixed words seems not to have syllabic restraints, e.g. 人道主义化 *réndàozhǔyìhuà* [[[human] [doctrine (-ism)]] SUFF] 'human + -ism + SUFF = humanitarianize', 人民公社化 *rénmíngōngshèhuà* [[[people] [commune]] SUFF] 'people's commune + SUFF = to institute people's communes' ("people's commune-ize"), 泛政治化 *fànzhèngzhìhuà* [[[general/pan-] [government]] SUFF] 'pan-government + SUFF = to politicize everything' ("pan-politicize").

historically attested lexical meaning of the verb 化 *huà* 'change, turn, transform' (cf. Arcodia 2008:192-193). Actually, examples of verbs formed with an adjective plus 化 *-huà* are attested in Classical Chinese as well. In the PKU corpus of Classical Chinese all the examples in (123) are attested, even though in some cases these 'A+ 化 *-huà*' verbs were used only intransitively. This seems to suggest that the item 化 *huà* began to develop an affixal use before the XX century, when, due to the foreign influence, it became very productive. In (124) some sentences which contain derived verbs with 化 *-huà* are presented:

(124) a. 美化　　　　环境、　　　　神化　　　　领袖　　　人物
        měihuà　　*huánjìng*　　*shénhuà*　　*lǐngxiù*　*rénwù*
        beautify　　environment　deify　　　　leader　　character
        'Beautify the environment, deify the leaders'
        (From Feng 2005:3)

    b. 这　种　　洗发水　　　可　软化　　　头发
        zhè zhǒng　xǐfāshuǐ　　*kě　ruǎnhuà*　　*tóufa*
        this kind　shampoo　　can　soften　　　hair
        'This shampoo can soften your hair.'
        (Google search June 2009)

    c. 他　的　　笑容　　　　　软化　　了　老师　的　　严厉
        tā　de　　xiàoróng　　　　ruǎnhuà　le　lǎoshī de　　yánlì
        he　DE　smiling expression　soften　ASP　teacher DE　severity
        'His smiling expression softened the severity of the teacher'
        (From the PKU corpus)

    d. 水泥　　　硬化　了　街道
        shuǐní　　yìnghuà　le　jiēdào
        cement　　harden　ASP　street
        'The cement hardened the street'
        (Google search August 2009)

    e. 这　项　　锻炼　　　能够　　　强化　　您　的　上　　身。
        zhè　xiàng　duànliàn　nénggòu　　qiánghuà　nín　de　shàng shēn
        this　CL　　exercise　can　　　strengthen you　DE　up　　body
        'This exercise will strengthen your upper body'
        (From the Nciku dictionary:
        http://www.nciku.com/search/all/examples/%E5%BC%BA%E5%8C%96)

    f. 这　部　　作品　丑化　　　了　农民　　起义军
        zhè　bù　　zuòpǐn　chǒuhuà　le　nóngmín　qǐyìjūn
        this　CL　　work　vilify　　ASP　peasant　insurrectionary army
        'This work vilifies the peasants insurrectionary army'
        (From the Nciku dictionary:
        http://www.nciku.com/search/all/examples/%E4%B8%91%E5%8C%96

g. [...] 不仅　　　美化、　亮化[111]、　绿化　　　了　　舞阳 [...]

bùjǐn　　mĕihuà　liànghuà　lǜhuà　　le　　wǔyáng

not only　beautify　lighten up　make green　ASP　Wuyang

'[...] it will not only beautify, lighten up, make green Wuyang County　[...]'

(http://www.wuyang.gov.cn/xiangxtp.asp?tpID=797)

What emerges from the examples in (124) is that the suffix 化 *-huà* seems to have a causativizing function (cf. also Feng 2005). However, given its characteristics, it seems to be different from the causative light verbs considered in the previous sections. First of all, the suffix 化 *-huà* seems to be able to attach to both stage-level and individual-level adjectives (see the examples in 124), which, as we have seen, can function as stative predicates but cannot be used as dynamic verbs, i.e. they do not possess a [proc] feature in their lexical specification. A Google search reveals the possibility to form verbs like 聪明化 *cōngminghuà* 'clever + SUFF = make clever' ("cleverify"[112]), as in the example in (125).

(125) [...]有　意识　　　　运用　　　这　种　　　思维　规律　每

　　　yǒu　yìshì　　　yùnyòng　zhè　zhǒng　sīwéi　guīlǜ　mĕi

　　　have consciousness utilize /apply this　CL　　　thought　rule　every

个　　人　　　都　　聪明化　　　　了[...]

ge　rén　　　dōu　cōngminghuà　le

CL　person　　all　make clever　ASP

'[...] There is the consciousness that by applying this rule of thought every person was made clever [...]'

（www.cpus.gov.cn/.../news/.../20080526151231.html）

Moreover, as we have seen, the suffix 化 *-huà* can attach to nominal bases too, deriving verbs. We therefore assume that the suffix 化 *-huà* possesses [init, proc] features and that it can form verbs from noun and adjectives through a process of conflation, as the one exemplified in (126), where the noun or the adjective in the *proc*P complement position is incorporated into the head (cf. Ramchand 2008 and 4.3.2 above). The suffix 化 *-huà*, thus, is not an [init] head forming the causative variant of inchoative verbs.

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[111] The CCED (2004) registers the word 亮化 *liànghuà* as: "The lightening up program is aimed at widely brightening blocks and buildings in the cities with lightening systems so that the night scenes can be put on display." (http://www.nciku.com/search/zh/detail/%E4%BA%AE%E5%8C%96/137866).

[112] A Google search reveals four occurrences of the verb *cleverify* in English as well.

(126) 美化 *měihuà* 'beautiful + SUFF = beautify'

```
                         initP
                        /    \
                     'x'      \
                             /  \
                         化 huà  procP
                                /    \
                             'y'      \
                                     /  \
                               <化 huà>  AP
                                        △
                                   美 měi 'beautiful'
```
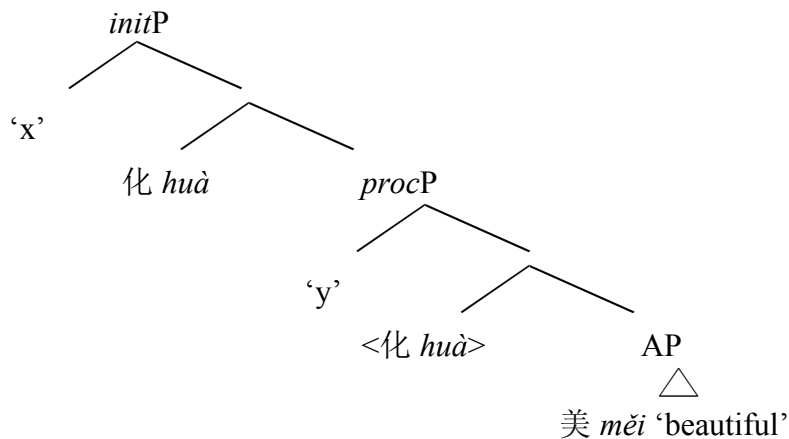
Assuming a structural notion of headedness, as it is clear from the representation in (126), the head of these complex verbs is, as expected, the suffix 化 *-huà*. Therefore, in contrast with the causative verbs analysed in the previous sections, they are right-headed.

A further problem related to these verbs is connected with their intransitive use. In fact, these verbs can surface as intransitives, as in the examples in (127).

(127) a. 最后　　　一　　层　　皮　　已经　　硬化　　了
　　　　　zuìhòu　*yī*　*céng*　*pí*　*yǐjīng*　*yìnghuà*　*le*
　　　　　last　　　one　　stratum　skin　already　harden　CL
　　　　　'The last stratum of skin already hardened'
　　　　　(From PKU corpus)

　　　b. 组织　　　在　　水　　中　　软化
　　　　　zǔzhī　*zài*　*shuǐ*　*zhōng*　*ruǎnhuà*
　　　　　tissue　　at　　water　middle　soften
　　　　　'The tissues softened in the water'
　　　　　(From PKU dictionary:
　　　　　http://www.nciku.com/search/all/examples/%E8%BD%AF%E5%8C%96)

　　　c. 假设　　　玻璃　　软化　　了。。。
　　　　　jiǎshè　*bōli*　*ruǎnhuà*　*le*
　　　　　suppose　glass　soften　ASP
　　　　　'I suppose that the glass softened...'
　　　　　(From 爱丽丝镜中世界奇遇记 'Through the Looking-Glass and What Alice found there' by Lewis Carrol[113], p. 5)

　　　d. 城市　　　美化、　　绿化　　　　了
　　　　　chéngshì　*měihuà*　*lǜhuà*　　*le*
　　　　　city　　　beautify　　make green　ASP
　　　　　'The city beautified and became green'
　　　　　(Google search, September 2009)

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[113] Bilingual edition, Chinese translation by Huang JianMin, Beijing: Waiguo Jiaoxue yu Yanjiu Chubanshe (1997).

Tang (2002) and Mochizuki (2004) consider verbs with 化 *-huà* as ergatives. In contrast, according to Chiang (2006), in TSM verbs suffixed with 化 *-huà* (which she considers a special category affected by Mandarin literary usage, with the influence of Japanese), when surface as intransitives, are pseudo-passives. It is beyond the scope of this work to explore the question in detail; however, we can observe that at least some of these complex verbs seem to be alternating, i.e. they can be used both as causatives and inchoatives. This seems to be confirmed by native speakers, who consider sentences like those in (128), with the adverbials 自己 *zìjǐ* and 自身 *zìshēn* 'by itself', as acceptable; thus, it seems that they can be conceived as occurring spontaneously, without the need of an Initiator.

(128) a. 最后　　　一　　层　　皮　　自己/自身　　硬化　　了
　　　　zuìhòu　*yī*　*céng*　*pí*　*zìjǐ zìshēn*　*yìnghuà*　*le*
　　　　last　　　one　stratum skin　itself　　　　harden　ASP
　　　　'The last stratum of skin hardened by itself'
　　　b. 组织　　　自己/自身　　软化
　　　　zǔzhī　　*zìjǐ zìshēn*　*ruǎnhuà*
　　　　tissue　　itself　　　　soften
　　　　'The tissues softened in the water by themselves'

L&RH (1994, 1995) show that verbs formed with the suffixes *-ize* and *-ify* cannot typically detransitivize: e.g. *the farmer homogenized/pasteurized the milk* vs. **the milk homogenizied/pasteurized*; *Carla humidified her apartment* vs. **her apartment humidified* (cf. L&RH 1995:104). L&RH (1995) propose that these morphologically complex verbs cannot detransitivize because they cannot occur spontaneously, without the intervention of an agent. Among them, some can detransitivize exactly because they can be conceived as occurring spontaneously, e.g. *I solidified the mixture* vs. *the mixture solidified.* Therefore, verbs that can detransitivize are externally caused verbs which express eventualities that can occur without the intervention of an agent.

Given these facts, we assume that, if some Chinese verbs suffixed with 化 *-huà* can be used both as transitive and as inchoative predicates (and thus are labile verbs), the reason could lie in the features of the suffix 化 *-huà*. In fact, we have claimed that 化 *-huà* is specified for [init, proc] features and is thus different from causative light verbs, which are items that bear only an [init] feature. Therefore, the suffix 化 *-huà*

may in principle spell out either both the *init*P and *proc*P heads or just the *proc*P head. This issue would need further investigation and we will leave it for further research.

4.7 Concluding remarks

In this chapter we have dealt with the issue of the causative alternation in Modern Chinese. We have shown that, in line with the high analyticity of Modern Chinese, the causative alternation is mainly expressed by means of light verbs added to inchoative verbs, forming their transitive variant.

After a review of the issue of unaccusativity in Mandarin Chinese, we have concluded that, as in English, verbs that can have a causative variant are mainly verbs of directed change (but also location), especially externally caused verbs of change of state. In Ramchand's (2008) system, these verbs lack the [init] feature and are specified for [proc] or [proc, res] features, e.g. 开 *kāi* 'open', 落 *luò* 'fall', 断 *duàn* 'break'.

In Chinese, as in English, many of the verbs that can undergo the causative alternation are deadjectival verbs. Therefore, we have dealt with the issue of deadjectival verbs in Chinese. In order to address the issue of deadjectival verbs in Mandarin Chinese, it has been necessary to clarify what adjectives are in this language, since it has often been claimed (cf. Li & Thompson 1981, Ross 1984, McCawley 1992, Larson 1991, Hengeveld 1992, Tang 1998, Lin 2004, among others) that Chinese does not have an adjectival category and that adjectives are a special subclass of verbs. We have shown that Mandarin Chinese indeed has an adjectival class distinct from the verbal one, with its own specific features and, consequently, adjectives and intransitive stative verbs cannot be lumped together in a single class (cf. Paul 2010). After defending the status of adjectives as a separate class, we have highlighted that in Chinese some adjectives, i.e. stage-level adjectives, can be used as inchoative verbs (cf. Liu 2010); we assumed that these lexical items are specified in the lexicon for both adjectival and verbal features.

In order to gain a better understanding of what kind of verbal features these items contain, we have made some remarks on deadjectival 'degree-achievement' verbs (cf. Dowty 1979, Abusch 1986, Hay, Kennedy & Levin 1999, Kennedy & Levin 2002, Kearns 2007, Ramchand 2008), which are characterized by their ability to describe a gradual change of state. We have observed that deadjectival 'degree-achievement'

verbs are not obligatorily telic and do not have an [init] feature in their lexical entry. After analysing their behaviour, we have concluded that Chinese deadjectival verbs are ambiguous between having [proc] features and [proc, res] features, in the same way as English deadjectival degree achievement verbs (cf. Ramchand 2008).

We have pointed out that Mandarin Chinese has a few labile verbs but, differently from English, we cannot assume for Chinese the existence of a process of causativization by means of a null *init* (causative) head, since it cannot be considered as a regular and transparent process in this language.

We have seen that in Mandarin Chinese the causative alternation is mainly expressed by means of a light or dummy V_1 added to the verbal root. These items are phonetically realized light verbs (带音的轻动词 *dài yīn de qīng dòngcí*), i.e. verbs that have a general and abstract semantic content (cf. Grimshaw & Mester 1988, Feng 2003, Zhu 2005, Jie 2008), e.g. 弄 *nòng* 'make, handle', 搞 *gǎo* 'do', which do not represent a particular action, origin or manner, as in the case of V_1 in resultative compounds, but are bleached verbs which just contribute an [init] feature, forming transitives from verbs that do not have an [init] feature in their lexical specification.

These light verbs are *init* heads that carry a general semantics of causation (in the same way as the null *init* head in English does) and spell out the *init* projection head, building an extra-layer on top of verbs lacking an [init] feature in their lexical entry. This can be seen as a process of structure building which enables to see that the direction of the derivation of the causative alternation is from inchoative to causative, the inchoative version being basic and the causative one being derived (it is structurally marked).

As far as headedness is concerned, assuming a structural notion of headedness, it is clear that the light verb is the head of the complex verbs, since it is the element that spells out the *init* layer. Therefore, in Chinese complex causative verbs formed with a light V_1 are left-headed.

Among light verbs, we have focused our attention on the verb 打 *dǎ* 'hit, beat, strike', which represents an interesting case. We have argued that when the 打 *dǎ* appear as V_1 in a [V V] compound, it is often ambiguous between being a full verb, which forms a resultative compound, or a light verb. We have shown the historical development of the meaning and function of 打 *dǎ* and we have compared it with similar elements in two other Sinitic languages, i.e. Taiwanese Southern Min (TSM)

拍 *phah4* and Hakka 打 *da2,* both meaning 'hit, beat, strike'. We have argued that the tendency of these verbs to develop as causative light verbs is due to the presence of certain semantic features in their meaning, i.e. the semantic primitives of causativity (cf. Moreno 1993), which, we have argued, derive from their sense of 'create, build, make'.

We have also examined complex verbs with 加 *jiā* 'add; increase' as V1, which we have claimed to represent transitive deadjectival verbs. We have propose that 加 *jiā* 'add; increase' too can be considered as a sort of causative light verb, which forms transitive verbs from verbs based on open-range adjectives, more precisely from those involving an increase in the property denoted by the adjective.

Moreover, we have shown that causative verbs with a light V_1 can surface as intransitives. We have argued that, when these verbs surface as intransitives, they must be considered as pseudo-passives rather than unaccusatives (cf. Cheng & Huang 1994, Ting 2003, Chiang 2006). After giving evidence in support of this claim, we have concluded that these verbs cannot be unaccusatives, due to the presence of the causative *init* light verb, which makes explicit the presence of the causative layer: thus, even though the Initiator role can be syntactically suppressed, it nevertheless remains implicit.

Lastly, we have introduced the issue of deadjectival verbs formed with the suffix 化 *-huà,* which seems to have a causativizing function (cf. Feng 2005), and we have compared them with verbs containing a light verb. We have concluded that these verbs are different from causative verbs formed with a light V_1: the suffix 化 *-huà* seems to be able to attach to both stage-level and individual-level adjectives; the suffix 化 *-huà* can attach to noun bases too. We have therefore assumed that the suffix 化 *-huà* carries [init, proc] features and that it can form verbs from nouns and adjectives through a process of conflation; it is not a causative head which creates transitive verbs from inchoative ones, as in the case of causative light verbs.

In the next chapter we will deal with the issue of resultative compounds, which, as we have argued in chapter 3, developed as an alternative strategy to express causativity, after the loss of other lexical and morphological means, highlighting the tendency to analyticity of Modern Chinese. This tendency to analyticity is also evident in the use of light verbs in the causative alternation presented in this chapter:

the presence of a light verbs makes explicit the 'action' meaning component (even though it does not represent a specific action), which brings about a change of state or location expressed by the verbal root. In resultative compounds, both the action and the change of state brought about are specified by two different verbal roots. We will compare Chinese resultative compounds to English resultative constructions and we will sketch a typology of Chinese resultatives.

5. An introduction to resultative compounds

5.1 Introduction

This chapter deals with the issue of Chinese resultative compounds, which, as we will see, represent a much debated issue in the literature. A Chinese resultative compound consists of two verbal roots, where V_2 represent the resultant state brought about by the action expressed by V_1. As we have seen in chapter 2, resultative compounds developed as an alternative analytical strategy to express causativity in Chinese, owing to the great typological shift undergone by this language, which had among its consequences the loss of synthetic and lexical means to express causativity.

Chinese resultative compounds have much in common with the English resultative construction, even though some differences between these two kinds of constructions do emerge. Many resultative constructions in English denote a complex event composed of an activity subevent and a result subevent. As highlighted by L&RH (1995, 1998), verbs usually lexicalize either the manner in which the action denoted by the verb is carried out, e.g. *sweep*, *run*, *walk*, or the result (either a change of state or location) brought about, e.g. *break*, *dry*, *arrive*. Verbs that lexicalize a result leave the nature of the action which brings about the change of state or location unspecified, i.e. they do not lexicalize a manner: the *break* resultant state, for example, can be brought about by performing different actions (cf. 4.4). In contrast, a resultative construction specifies both the manner and the resultant state by means of two different predicates.

According to L&RH (1995), an XP (an AP or a PP in English) which denotes a state following an activity verb can only be interpreted as an accomplishment, and the causal relation between the activity and the change of state follows from their interpretation as accomplishments (cf. also Pustejovsky 1991). In fact, accomplishments (in Vendlerian terms) are generally analysed as complex predicates involving a causing event which brings about a change of state or location (cf. Dowty 1979, Hoekstra 1988, Pustejovsky 1991, Sybesma 1992, among others). However, while simple accomplishment verbs, as we mentioned above, usually specify either the change of state or the nature of the activity leading to it, resultative constructions express both the components by means of two different predicates.

Therefore, resultative constructions are causative predicates (even though, as we will see, in some cases they are not) and, according to Goldberg (1995:193), the action denoted by the verb must be interpreted as directly causing the change of state. Resultative constructions, then, should be seen as expressing direct causation.

In this chapter, we will first introduce the issue of resultative constructions in English, especially those with a result AP, and show their main characteristics and constraints, providing also an overview on some of the main positions which emerge from the literature on the topic. We will present the different kinds of English resultative constructions found in the literature and discuss the much debated restriction found in this kind of constructions, i.e. the Direct Object Restriction (DOR), pointing out some violations of it. We will then present other kinds of restrictions found in English resultative constructions, and focus on the constraints on the possible verbs and APs which can appear in these constructions, highlighting their properties. This will provide an overview which will enable us to compare the different kinds of resultative constructions in English and their properties with those found in Chinese resultative compounds.

We will then provide an overview of the different types of Chinese resultative compounds, of their main characteristics and restrictions. Lastly, we will make some comparisons between English resultative constructions and Chinese resultative compounds, stressing the differences between these two kinds of constructions. This will constitute the fundamental data for the analysis of Chinese resultative compounds, which will be carried out in the next chapter.

5.2 The English resultative construction

The English resultative construction is a much debated issue in the literature. There is a vast literature on resultatives that tries to explain the distribution of these constructions and their interpretation and to find out what kind of constraints they are subject to. Resultative constructions have been studied using two different approaches: a syntactic approach (cf. Simpson 1983, Hoekstra 1988, Bresnan & Zaenen 1990, L&RH 1955[1], among others); a semantic approach (cf. Van Valin 1990,

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[1] Actually, L&RH (1995) propose a mixed syntactic/semantic account of resultative constructions. In their approach, as in all of the research on the syntax-lexical semantics interface, the lexical property of a verb that is taken to determine its syntactic behaviour is its meaning (cf. also Levin 1993, Pinker 1989, RH&L 1998).

Jackendoff 1990, 1997, Goldberg 1995, Wechsler 1997, Goldberg & Jackendoff 2004, among others).

We cannot do justice in this thesis to the vast literature on the topic and to the wide variety of analyses proposed. In this section we will try to provide a picture of the main characteristics of the resultative construction in English, which will enable us to compare it with Chinese resultative V-V compounds. In order to make the comparison with Chinese resultative compounds clearer, we have chosen to focus our attention mainly on English resultative constructions having an AP as resultative phrase.

5.2.1 Types of resultative constructions and restrictions

One of the most widely recognized constraint on resultative constructions is the one first proposed by Simpson (1983), i.e. the 'Simpson's law', better known as 'Direct Object Restriction (DOR) (cf. L&RH 1995). This restriction predicts that, in a resultative construction, the result is predicated of the object and not of the subject[2]. Therefore, according to this assumption, a resultative construction should be transitive, as illustrated in (1):

(1)   a. *I hammered the metal flat.*
        b. *She wiped the table clean*
                    vs.
        c. **Maria laughed insane.*
        d. **Beth shouted hoarse.*

In order to obtain the intended meaning in (1c) and (1d), a so-called 'fake object' (cf. Simpson 1983) is needed, as in the examples in (2):

(2)   a. *Maria laughed herself insane.*
        b. *Beth shouted herself hoarse.*

According to Simpson (1983), the 'fake object' is a syntactic device which allows the resultative phrase to be predicated of the subject, since the resultative phrase is predicated of the 'fake object', which is coreferential with the subject.

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[2] On a depictive interpretation, the XP may be predicated of the subject. In *Julia burned the cookies dirty* (cf. L&RH 1995:35), the resultative interpretation is not allowed, i.e. the sentence cannot mean 'Julia got dirty as a result of burning the cookies', but rather the meaning is that 'Julia burned the cookies when she was dirty'.

There is also another kind of resultative construction based on unergative verbs, where the post-verbal NP is not a fake object (cf. L&RH 1995), as it is shown in the examples in (3).

(3)   a. *He ran the pavement thin.*
           b. *The dog barked me awake.*

In the examples in (3), the post-verbal NP is clearly not subcategorized by the verb: **he ran the pavement*, **the dog barked me*. These cases differ from those with a fake object only in that their objects, differently from fake objects, are not coreferential with the subject.

Lastly, there are also resultative constructions based on unergative or transitive verbs where the post-verbal NP is a non-subcategorized object, but nevertheless it is an inalienably possessed NP (more often than not a body part), as in the examples in (4).

(4)   a. *Sylvester cried his eyes out.* (from L&RH 1995:36)
           b. *Cinderella scrubbed her fingers to the bone.* (from L&RH 1998:103)

These cases are similar to those with a fake object because, even though the NP is not a reflexive pronoun, it nevertheless includes a possessive pronoun understood to be coreferential with the subject (cf. L&RH 1995:37).

L&RH (1995) further observe that unselected NPs are found also with a certain class of transitive verbs, including *eat* and *drink*, i.e. verbs that can be used intransitively with an unspecified object. See the examples in (5):

(5)   a. *They drank the teapot dry.*
           b. *She ate the plate empty.*

The sentences in (5) are interpreted in the same way as resultative constructions based on unergative verbs and an unselected NP seen above. Carrier & Randall (1992) point out that these constructions are possible only with transitive verbs that allow the omission of the object, while they are not allowed with transitive verbs that do not allow the omission of an unspecified object, as it is illustrated in (6), from L&RH (1995:38).

(6)   a. *The bombing destroyed *(the city).*
           b. **The bombing destroyed the residents homeless.*

A possible exception to the DOR is represented by resultative constructions based on passives and unaccusative verbs, like those in (7).

(7)   a. *My computer was wiped clean.*
          b. *The house was painted red.*
          c. *The black box broke open.*
          d. *The river froze solid.*

The examples in (7) show that the resultative phrase can be predicated of the surface subject; this seems to represent a violation of the DOR. However, the surface subject of a passive verb and of an unaccusative verb is an underlying object, therefore the DOR can be maintained (cf. L&RH 1995).

At this point, we need to make a small remark on resultative constructions based on unaccusative verbs. Differently from the transitive resultatives (NP$_1$ V NP$_1$ XP), which are complex causative events consisting of an activity and a resultant subevent (cf. 5.1), the intransitive resultatives based on unaccusative verbs (NP$_1$ V NP$_1$) are not causative. In fact, in these cases the verb, e.g. *break*, already identifies a resultant state by itself and the resultative phrase further specifies this resultant state; no causative relationship is involved. Therefore, not all resultative constructions are causative. We will return to this issue later on.

5.2.2 The Direct Object Restriction

As we have seen in the previous section, the DOR predicts that the resultative phrase has to be predicated of the object and not of the subject. Moreover, the DOR also predicts that the resultative phrase cannot be predicated of NPs that are not direct objects, e.g. obliques (cf. Simpson 1983, L&RH 1995). See the examples in (8) and (9), from L&RH (1995:41):

(8)   a. *John loaded the wagon full with hay.*
          b. **John loaded the hay into the wagon full.*

(9)   a. *The silversmith pounded the metal flat.*
          b. **The silversmith pounded on the metal flat.*

Some authors (cf. Williams 1980, Rothstein 1983) have argued that the DOR can be reduced to a mutual c-command requirement on predication. According to this view, since verbs impose various semantic restrictions on the resultative phrases they can appear with, the resultative phrase itself can be considered to be selected by the

verb, as we will see. Being a selected constituent, it must appear inside the VP headed by the verb: in order to meet the c-command requirement, the resultative phrase can only be predicated of the direct object. However, Carrier & Randall (1992) point out that the fact that a resultative phrase does not c-command the subject of the VP does not preclude it from being predicated of the subject. In fact, depictive phrases can be predicated of the subject even though they are inside the VP (cf. Rapoport 1987, Roberts 1988).

L&RH (1995:49) highlight that the resultative phrase is VP internal and is part of the core eventuality described by the VP. In fact, they stress the fact that resultative phrases, as noted by many authors (cf. Dowty 1979, Hoekstra 1988, Pustejovsky 1991, Van Valin 1990, among others), often derive accomplishments from achievements (cf. 5.1). Resultative constructions denote a change of state even when the verb on which the construction is based does not denote a change in state: e.g. *I pounded the metal* vs. *I pounded the metal flat.*

L&RH (1995:50) remark that, as it is well known, an NP which denotes an entity that changes state is always expressed as a direct object and that this generalization is usually formalized by a linking rule which states that arguments with a patient or theme role are expressed as direct objects (cf. Anderson 1977, Marantz 1984, among others). Therefore, L&RH (1995) assume that this rule applies also to the entities undergoing a change of state in the resultative construction. According to them, the change of state linking rule can have one of the two forms shown in (10):

(10)   a. An NP that refers to the entity that undergoes the change of state in the eventuality described in the VP must be governed by the verb heading the VP.
        b. An NP that refers to the entity that undergoes the change of state in the eventuality described in the VP must be the direct object of the verb heading the VP.
        (L&RH 1995:51)

According to them, (10a) is necessary in resultative constructions based on unergative verbs, where the postverbal NP is not the direct object of the verb, but the subject of a small clause (cf. Hoekstra 1988). In contrast, in (10b) the NP is the direct object of the verb.

L&RH (1995:51) further assume that if the rule in (10) is correct, then the DOR is well explained, i.e. the resultative phrase must be predicated of the direct object or of the NP governed by the verb. Assuming that the expression of a verb's argument does

not change with the addition of a resultative phrase (cf. 5.2.6), L&RH argue that a resultative construction has to meet two requirements concerning argument expression: the verb argument must be expressed according to the lexical specifications of the verb and in accordance with the linking rule presented in (10); the NP denoting the entity undergoing change of state must be the direct object of the verb or it must be governed by the verb; the NP must be in the appropriate structural relation with the resultative XP.

According to this analysis, the fake object is not a device to ensure that the DOR is satisfied but, rather, it functions as a subject for the predicate heading the resultative phrase, and it is forced by the linking rule in (10): in fact, without the presence of the fake object, the resultative phrase would not be predicated of an element to which the rule can apply. At the same time, the fake object allows the predicate to meet the linking rule without needing any change in the lexical properties of the verb. This explanation of the DOR proposed by L&RH (1995) is based on the assumption that the resultative phrase is not licensed by the verb but, rather, it is derived compositionally. For further details on L&RH's (1995) account of the DOR the reader can make reference to their work[3].

5.2.2.1 Violations of the DOR

As we will see, the validity of the DOR has been called into question for Chinese resultative compounds (cf. 5.3.3.1), where this restriction seems not to hold. Moreover, the DOR has been challenged in English as well (cf. Verspoor 1997, Wechsler 1997). Rappaport Hovav & Levin (henceforth RH&L, 2001), point out the existence of examples like those in (11), where the resultative constructions are based on transitive verbs, but nevertheless the result is predicated of the subject.

(11) a. *He followed Lassie free of his captors.*
         (cf. RH&L 2001:770, example from Wechsler 1997:313)
      b. *John danced Marzukas across the room.*
         (cf. RH&L 2001:770, example from Verspoor 1997:151)
      c. *a man grabbed and groped her and tried to get under her clothing, but she kicked free and fled.*
         (From RH&L 2001:774)

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[3] For a further (syntactic) account of the DOR, see Hoekstra (1988), where the predication of a result XP of a non-derived subject violates syntactic principles like the ECP (empty category principle).

d. *One woman gets up to leave, but Red-Eyes grabs her roughly by the arm and pulls her into his lap. She wriggles free, but remains seated obediently beside him.*
(From RH&L 2001:774)

RH&L (2001) have suggested that these examples can be accounted for on the basis of the semantic relations holding between the subject and the object. In cases like those in (11a), the event describes a 'correlated motion' (cf. Croft 2000:95-96): the position of the subject is correlated (even constrained) by that of the object. Therefore, examples like the one in (11a) could be seen as if the resultative phrase were predicated of the object (saving the DOR): the resultative XP would specify the position of the object and the location of the subject would be indirectly determined since its motion is constrained by the location of the object.

The resultative phrase in (11b) too could be seen as predicated of the object. The event described involves the creation of a performance named by the object (Croft 2000:97) or involve cognate objects (more precisely, hyponyms of direct cognate objects) which name the performance (cf. RH&L 2001:771). Therefore, the performance itself would traverse a path as it is created and, since the subject is engaged in the performance, the subject's path could be determined from that of the performance.

However, RH&L (2001) argue that this is not the right way to look at the problem. They give evidence based on passivization: as highlighted by Bach (1980) and Bresnan (1978), verbs with subject-predicated complements cannot be passivized: *Sam was promised to leave the country*. Therefore, according to RH&L (2001), the ungrammaticality of examples like those in (12), from RH&L (2001:771), prove that these resultatives are subject-oriented:

(12)   a. *The star was followed out of Bethlehem.*
        b. *Lassie was followed free of his / the captors.*
        c. *The breeze was ridden clear of the rocks.*

The existence of subject-oriented resultatives undermines the validity of the DOR; nevertheless more often than not the DOR does hold. RH&L (2001) try to give an explanation able to account for the general validity of the DOR. First of all, they observe that the causative event structure associated with resultatives, which describes events that are not necessarily temporally dependent, requires that two arguments be

realized in the syntax; thus, when two subevents share an argument, it is necessary to introduce a reflexive.

Moreover, RH&L (2001:786) observe that studies on transitivity based on the event structure (cf. DeLancy 1984, Langacker 1987, Croft 1991, among others) point out that the event denoted by a transitive verb usually implies transmission of a "force" from one entity to the other and a change of state in the second entity. Therefore, in subcategorized NP resultatives the result XP must be predicated of the argument of the verb which is the force recipient (if any is present)[4]. Given this generalization, since most transitive verbs describe events involving the transition of force, and the argument corresponding to the force recipient is usually the direct object, the majority of transitive-based resultatives are predicated of the object. This would explain why the DOR seems to be empirically correct. However, RH&L (2001) point out that with non-canonical transitive verbs, which lack an NP characterized as the force recipient, the resultative phrase can be predicated of the subject, as it is the case for the examples in (11). This is why subject-oriented resultatives are rare. Therefore, the validity of the DOR comes very close to be true just by chance.

5.2.2.2 Alternative accounts to the DOR for verbs with variable behaviour

In 5.2 we have seen that sentences like *Maria laughed insane* or *She yelled hoarse* violate the DOR, thus Simpson (1983) suggests that a fake object is needed in order to obtain the intended meaning. The fake object would be a syntactic device allowing the resultative phrase to be predicated of the subject, since the resultative phrase is predicated of a (fake) object, which is coreferential with the subject; in this way the DOR is preserved.

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[4] According to L&RH (2001:787), this generalization comes from the basic properties of the event singled out by Croft (1991:173):
    a. a simple event is a (not necessarily atomic) segment of the causal network;
    b. simple events are non-branching clausal chains;
    c. a simple event involves transition of force;
    d. transmission of force is asymmetric, with distinct participant as initiator and endpoint.
The generalization according to which the result XP has to be predicated of the force recipient would come from (b). In a sentence like *Tracy wipes the table clean*, the interpretations are potentially two: *clean* could be predicated either of the subject or of the object. On the interpretation according to which Tracy becomes clean by wiping the table, there would be a branching in the causal chain: one branch would represent the transmission of force and the other the change of state in Tracy. This branching would violate the condition in (b) above and, thus, must be ruled out.

Adopting a constructionist approach, Goldberg & Jackendoff (2004) try to explain the ungrammaticality of sentences like those in (1c) and (1d), i.e. *Maria laughed insane* and *Beth shouted hoarse*, appealing to the Semantic Coherence Principle proposed by Goldberg (1995), which prevents incompatible roles to combine. According to this principle, "roles of the construction (rC) and roles of the verb (rV) may only unify if they are semantically compatible; role rV and rC are semantically compatible if and only if rV can be construed as an instance of rC." (Goldberg & Jackendoff 2004:544-545).

According to this principle, an agent role, for example, cannot combine with a patient role. The requirement is that the role of the verb be construable as an instance of the role of the construction. Sentences like those in (1c) and (1d), e.g. *she yelled hoarse*, would represent a non-causal resultative, and the construction associated to it is *X BECOME Y*. This construction predicts that the first argument, which maps to subject position, is a patient (i.e. something happens to X). However, verbs like *yell* and *cry* require an agent argument as subject: since an agent role cannot be construed as a type of patient, the combination of *yell* or *cry* and the construction *X BECOME Y* is not allowed. What seems to be important is not the general verb class of the verb but rather its specific semantics. A verb like *bleed*, contrasts with *cry*, in that it can appear in the bare XP resultative construction: while both are verbs of body function, the subject of *bleed* is a kind of patient: bleeding is something that happens to someone. This is why a sentence like *the tiger bled to death* is grammatical. This prediction is borne out also by examples involving verbs of body functions like *coughing*, *sneezing* and *yawning*. The argument of these verbs can be construed either as agents (things we do) or as involuntary patients (things that happen to us). These verbs, indeed, can appear either in fake object resultatives or in bare XP resultatives, as it is shown in (13) and (14) respectively, from Goldberg & Jackendoff (2004:551):

(13)   a. *Patamon coughed himself awake on the bank of the lake where he and
           Gomammon had their play.*
        b. *Ron yawned himself awake.*
        c. *She sneezed herself awake as the leaf landed on her nose.*

(14)　　a. *He coughed awake and we were all overjoyed, especially Sierra.*
　　　　b. *the kittens yawned awake and played with the other young ...*
　　　　c. *Zoisite sneezed awake, rubbing his nose and cursing under his breath.*

Therefore, according to Goldberg & Jackendoff (2004), it is the Semantic Coherence Principle that predicts this variability.

RH&L (2001) consider other cases of verbs with a variable behaviour, i.e. verbs of manner of motion, like *run, dance, swim*, and verbs of sound emission, like *ring, whistle, rumble,* which can be found both in the transitive and the intransitive resultative patterns (cf. Hoekstra 1984, L&RH 1995, RH&L 2001). In order to preserve the DOR, some authors (cf. L&RH 1995) have assumed that these verbs have a dual classification, i.e. they can be both unergative and unaccusative: they are unergative when found in the reflexive XP pattern, *e.g. the passengers jumped their way clear of the burning bus* (L&RH 1995:201), but unaccusative in the bare XP pattern, e.g. *the passengers jumped clear of the burning bus* (L&RH 1995:201).

However, RH&L (2001) highlight that it is not clear why manner of motion verbs and verbs of sound emission are able to appear in both patterns: they are basically unergative but, differently from other unergative verbs, can appear both in the bare XP and in the resultative patterns.

RH&L (2001) argue that the choice of the resultative pattern depends on the structure of the event (cf. also 5.2.2.1) and not on the syntactic classification of the verb or on the semantic type of the result XP. The temporal relation between the two subevents is determined by the nature of the event denoted by the verb and by the nature of the achieved state. RH&L claim that, if a particular verb-result combination can express both temporally dependent and temporally independent events, then it should be found in both the resultative patterns, as it is shown in (15), from RH&L (2001:777).

(15)　　a. *One woman gets up to leave, but Red-Eyes grabs her roughly by the arm and pulls her into his lap. She wriggles free, but remains seated obediently beside him.*
　　　　b. *'Mr Duggan became alarmed about being caught in the door of a lift which was about to begin its descent and wriggled himself free.'*

According to this account, there would be no need to rely on the verb class or other syntactic explanations, and the variability can be explained in terms of the event structure.

5.2.3 Further constraints: the Animate Instigator Constraint and aspectual and temporal constraints

Goldberg (1995) singles out some other constraints on resultative constructions. One of these constraints is the Animate Instigator Constraint, according to which only animate instigator arguments are acceptable as subjects in transitive resultative constructions. These animate instigators do not need to be agents, since no volitionality is required. See the examples in (16), from Goldberg (1995:193):[5]

(16) a. *She coughed herself sick.*
                        vs.
       b. **The hammer pounded the metal flat.*

As far as aspectuality is concerned, Van Valin (1990) proposes that resultatives can only occur with telic predicates (17; cf. also 5.2.6):

(17) a. *Harry shot Sam death* (cf. *Harry shot* (**for an hour*))
       (Goldberg 1995:194)

In contrast, Dowty (1979) and Jackendoff (1990) suggest that resultatives can only occur with atelic predicates (18).

(18)   *Sam talked himself hoarse* (cf. *Sam talked* (*for an hour*))
       (Goldberg 1995:194)

According to Goldberg (1995), the aspectual constraints on resultatives does not concern the difference between telic and atelic verbs, since both are allowed. According to Goldberg, there is a constraint which does not allow any time delay between the action denoted by the verb and the subsequent change of state: "The change of state must occur simultaneously with the endpoint of the action denoted by the verb." (p. 194). Following this constraint, a sentence like *Sam cut himself free* cannot mean that Sam cut himself, causing his captors to release him in order to clean him up, but rather that Sam cut the bonds which prevented him from being free (cf. also Goldberg & Jackendoff 2004:545)[6]. The same can be said for a sentence like *Chris shot Pat dead*, which cannot mean that Chris shot Pat, who later died in the

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[5] Goldberg (1995:193) observes that in some dialects inanimate instigators are also acceptable: e.g. *the jackhammer pounded us deaf* (from Randall 1983, cit. in Goldberg 1995:193).

[6] According to Fodor (1970), monoclausal causatives (b) do not allow the means to entirely precedes the main event temporal relation (cf. also McCawley 1978; Jackendoff 1990): a. *Sue made Bill die on Thursday by poisoning his breakfast on Wednesday*. vs. b. **Sue killed Bill on Thursday by poisoning his breakfast on Wednesday*.

hospital, but it rather means that Pat died immediately from the shot. According to Goldberg, this constraint can be interpreted as a consequence of a more general constraint, i.e. that causation must be direct: no intervening period is possible in a causal chain.

However, we have seen in 2.3 that direct causation does not imply necessarily temporal contiguity and, in fact, RH&L (2001) suggest that also the two causally related subevents involved in a lexical causative, e.g. *open*, *break*, *melt*, do not need to be temporally dependent. For example, RH&L (2001:783) point out that in a sentence like *The widow murdered her guest by putting arsenic in his coffee*, the act of putting arsenic in the coffee does not extend to the point when the drinkers die; in the same way, in a sentence like *Leslie's persistent banging broke the window*, the action of banging can be protracted but the result expressed by breaking is punctual. The same seems to be possible with resultatives (19):

(19) *Sam sang enthusiastically during the class play. He woke up hoarse the next day and said, 'Well, I guess I've sung myself hoarse.'* (RH&L 2001: 775)

This is why L&RH (1999:33) suggest that the primitive for direct causation is the absence in the causal chain of an intervening event between the causing and the result subevent: in some cases, the absence of an intervening event is equivalent to temporal contiguity, but this is not always the case. According to RH&L (2001), only in the case of the bare XP pattern (NP$_1$ V NP$_1$) the progress of the event denoted by the verb and the progress towards the achievement of the result state must be temporally dependent (cf. also L&RH 1999)[7]. Therefore, the temporal constraint is at least questionable.

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[7] Usually, the two subevents found in other patterns do not need to be temporally dependent (cf. RH&L 2001:793-794). However, according to RH&L (2001), in subject-oriented transitive-based resultatives, e.g. *The wise man followed the star out of Bethlem*, and in object-oriented transitive-based (only with verbs of exerting force), e.g. *We pulled the crate out of water*, the two subevents are temporally dependent and the whole construction has a simple event structure. It should be noted that, according to L&RH (2001:793), among bare XP resultatives, those of the kind of *Robin danced out of the room* have two temporally dependent subevents, while those like *the pond froze solid* have no distinct subevents, the result phrase representing a further specification of the result expressed by the verb.

5.2.4 Constraints on the verb

L&RH (1995:56-62) observe that two classes of unaccusative verbs, i.e. stative verbs, such as *remain*, and inherently directed motion verbs, such as *go*, *come* and *arrive,* cannot occur with a resultative phrase.

L&RH (1995) point out that verbs of inherently directed motion are achievement verbs: they specify an achieved endpoint and an attained location. On the assumption that resultative phrases function as delimiters (i.e. they are normally added to non-delimited eventualities[8]; cf. L&RH 1995:56-58), and following the grammatical constraint proposed by Tenny (1987:190), i.e. that an eventuality may have only one delimitation, L&RH (1995) conclude that inherently directed motion verbs, which are lexically delimited and involve a change in location, cannot take a further delimiter encoded syntactically and, thus, cannot occur with a resultative phrase.

Verbs of inherently directed motion can appear with a goal phrase only if they serve to further specify the endpoint already encoded by the verb: e.g. *We arrived at the airport*. According to L&RH (1995) this is supported by the case of verbs of manner of motion, e.g. *swim*, *walk*, which can appear with a resultative phrase, but only if there is no goal phrase: e.g. *We ran the soles off our shoes* vs. **We ran the soles off our shoes into the town* (i.e. we wore our soles down as a result of running into town).

L&RH (1995) further point out that more evidence in support of this hypothesis comes from the incompatibility of transitive verbs such as *bring* and *take* with resultative phrases: these verbs involve inherently specified direction and allow only a depictive interpretation of an XP: e.g. **Sharon took/brought Willa breathless.* In contrast, verbs like *break* can appear with a result phrase, even though they involve a lexical delimitation, e.g. *John broke the box open*: the delimitation implied by these verbs is a change of state, not of location, and, as we have seen, the result phrase further specifies the inherent state expressed by the verb. For further details, see L&RH (1995:59-61).

Moreover, L&RH (1995) highlight that resultative phrases are generally incompatible with all statives, both transitives and unaccusatives (cf. also Hoekstra 1992). See the examples in (20), from L&RH (1995:61).

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[8] As we have seen, with verbs that are lexically delimited, resultative phrases provide a further specification of the achieved state.

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(20)   a. *The botanist smelled the moss dry from across the room.
        b. The botanist sniffed the moss dry.

The examples in (20) show the contrast between a stative verb of perception, i.e. *smell* (20b), which is not allowed in a resultative construction, and a non-stative verb of perception in the meaning area of 'smell', i.e. *sniff*, which, in contrast, is allowed with a result phrase. L&RH (1995) attribute this contrast to the typology of ontological categories of eventualities. In their view, the addition of a resultative phrase can be seen as a way to map an activity into an accomplishment, where the resultative phrase acts as a delimiter (see above). However, since it is not possible to have a delimited state, resultative phrases cannot be used to create this type of eventuality from stative verbs.

5.2.5 Constraints on the result AP

Goldberg (1995) points out that the kinds of adjectives that can occur in a resultative phrase are quite limited. Some common adjectives that can be found in the resultative construction are: *asleep, awake, empty, full, free, sick, hoarse, dead*, etc. (Goldberg 1995:195). In contrast, adjectives like *dirty, happy, afraid* are generally excluded: e.g. *He drank himself happy*, *He wiped the table dirty*.

According to Goldberg (1995), the adjectives that are most likely to appear in a resultative construction are adjectives having a clearly delimited lower bound and, thus, typically non-gradable, which should be unable to occur with quantifying phrases: ?*A little flat*, ?*A little dirty*. However, Goldberg (1995) observes that adjectives like *sick* and *hoarse*, even though they are likely to occur in a resultative construction, obviously have no delimited lower bound: *a little sick, a little hoarse*. Nevertheless, she claims that when they appear in a resultative construction with a fake object, they are interpreted as delimiting a clear boundary beyond which the activity cannot continue: *He talked himself hoarse* vs. ?*He talked himself a little hoarse*. Therefore, they do not represent an absolute scale but rather a functioning scale. According to Goldberg (1995), exceptions to this generalization can be found, above all among resultatives based on verbs that are already lexical causatives: e.g. *He made the metal safe/pretty/damp/dirty*; *He painted his house pink*.

The first remark that needs to be made concerns the non-gradable nature of the adjectives involved in the resultative construction, as claimed by Goldberg (1995). Actually, adjectives like *long, flat, expensive, straight, full*, etc. all seem to be

gradable adjectives (cf. Wechsler 2001, 2005) (17a) and contrast with non-gradable adjectives, like *dead*, *sold*, etc. (21b).

(21)　　a. Gradable adjectives:
　　　　　very / quite / extremely {long / flat / expensive / straight / full / dull}
　　　　　longer, flatter, more expensive, straighter, fuller, duller
　　　　b. Non-gradable adjectives:
　　　　　??very / quite / extremely {dead / triangular / invited / sold}
　　　　　??more dead / triangular / invited / sold
　　　　　(Wecheesler 2005:261)

Wechsler (2005) argues that, basically, the adjectives that can appear in the resultative construction are gradable, closed-scale adjectives. However, he proposes that there can be differences in the kind of adjectives that can appear in transitive resultatives with subcategorized object and in bare XP resultatives (in his terms, 'control resultatives', i.e. resultative phrase whose predication subject is a semantic argument of the matrix verb) and resultative based on unergative verbs or on transitive verbs with a non-subcategorized object (in his terms ECM resultatives, i.e. the predication subject for the secondary predicate is not a semantic argument of the matrix verb). Wechsler (2005:261) makes two predictions: 1) "When the resultative's predication subject is an argument of the verb (i.e. in a control resultative), homomorphism and coextension between property scale and event are required."; 2) "When the resultative's predication subject is not an argument of the verb (i.e. in an ECM [Exceptional Case Marking] resultative), homomorphism and coextension between property scale and event are *not* required.".

According to Wechsler (2005), with control resultatives only gradable, closed-scale adjectives are allowed (22):

(22)　　*He wiped it clean / dry / smooth / *damp / *dirty / *stained / *wet.*
　　　　(Green, 1972, ex. 6b/7b)

Wechsler (2005) explains the contrasts in (22) with the different nature of the adjectives involved. Adjectives like *clean, dry* and *smooth* are maximal endpoint closed-scale adjectives and, thus, they provide suitable bounds for the event. In contrast, adjectives like *damp, dirty*, *stained* and *wet* are minimal endpoint, open-scale adjectives: their inherent standards, which are needed in order to serve as suitable telic bounds, are too low to be useful, so contextual standards normally prevail. However, according to Kearns (2007), these adjectives are not open-scale. Despite

their odd minimal values, the *wet/dirty* adjectives still have maximal values, as in *the towel was totally/completely wet/dirty*. It should be noted that *completely* and *totally* here are oriented to the upper bound (cf. 4.3.3 and chapter 4, fn. 50), and *the towel was completely wet* entails that 'the towel could not have been wetter'. Therefore, Kearns, in accordance with the usage of the term 'closed scale' to mean 'a scale with an upper (maximal) bound', assumes that *wet* and *dirty* are closed-scale adjectives. In fact, *wet, dirty, dry* and *clean* are all adjectives associated with upper bounds, therefore are all closed-scale adjectives. If this is the case, the contrasts in (22) should be explained on different basis. We will return to this issue later on, talking about Chinese resultative compounds.

Moreover, Wechsler (2005) claims that non-gradable adjectives may form resultatives with verbs that almost always denote punctual events, e.g. *shoot, cut, kill*, etc. He points out several examples involving the adjective *dead*, e.g. *shot dead, cut dead, killed dead*.

Lastly, ECM resultatives can occasionally appear with open-scale adjectives, like *hoarse* or *sick*, and this should be due to the fact that the predication subject for ECM resultatives is not part of the argument structure of the verb and, thus, no homomorphism or coextensiveness requirement obtains. However, it should be noted that Wechsler (2005) considers these adjectives as open-scale adjectives since they can occur with adverbs like *completely*, e.g. *completely hoarse/sick/*etc. Nevertheless, Wechsler admits that in these contexts *completely* is synonymous with *very* (cf. 4.3.3 and chapter 4, fn. 50), since you can say *I am completely sick, but Susan is even sicker*. As we have seen, the use of the adverb *completely* can be a good test for distinguishing between open-scale and closed-scale adjectives only if *completely* is oriented to the upper bound. Moreover, Kearns (2007:48) observes that these adjectives can be modified by *almost/half* (cf. 23a-b), in contrast open-scale adjectives cannot (23c).

(23) a. *Otto laughed himself almost/half sick.*
      d. *Max shouted himself almost/half hoarse.*
      c. **The gap half widened*[9].

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[9] In the case of *the gap almost widened*, only the event cancellation reading is possible (cf. 4.3.2 and chapter 4, fn.43); the sentence cannot mean that the event occurred but not completely.

Therefore, according to Kearns (2007), adjectives like *hoarse* and *sick* should be considered as closed-scale adjectives.

A final remark concerns contrasts like the one shown in (24):

(24)   a. *We danced tired.*
         b. *We danced ourselves tired.*

According to Wechsler (2005), the contrast can be accounted for in his theory: (24a) is unacceptable because *tired*, being an open-scale adjective, is inappropriate for a control resultative. In contrast, (24b) is acceptable because it is an ECM resultative and, thus, lacks the aspectual requirements following from the event-argument homomorphism. Therefore, the adjective *tired* cannot be found with control resultatives, including transitive resultatives with a subcategorized object: e.g. **the coach trained us tired*. However, this explanation seems not to hold, since a sentence like *the soldier rode the horse tired* (the horse became tired due to the riding) is apparently acceptable (cf. Krifka 2001:3)[10].

Lastly, there is another constraint concerning the kind of adjectives that can occur in the resultative construction: adjectives derived from either past or present participle are not allowed as result APs (cf. Green 1972, Carrier & Randall 1992, Goldberg 1995), e.g. **to sit the chair broken, *to polish the shoes shined* (cf. Chen J. 2008). See the examples in (25), from Goldberg (1995:197):

(25)   a. *She painted the house red.*
         b. **She painted the house reddened.*
         c. **She painted the house reddening.*
         d. *She shot him dead.*
         e. **She shot him killed.*
         f. **She shot him dying.*
         g. *She kicked the door open.*
         h. **She kicked the door opened.*
         i. **She kicked the door opening.*

Summing up, English resultatives impose restrictions on the kind of AP that can appear as resultative phrases. English resultative APs cannot be present or past participle adjectives. Moreover, it seems that gradable, closed-scale adjectives are

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[10] According to Krifka (2001), this sentence may have two depictive readings as well:
Object-depictive: 'The horse was tired during the riding'
Subject-depictive: 'The soldier was tired during the riding'
In contrast, a subject-oriented resultative reading is excluded: *'The soldier became tired due to the riding'

preferred, even though some non-gradable adjectives, e.g. *dead*, can occur in resultative constructions. Some contrasts like those in (22), i.e. *He wiped it clean / dry / smooth / *damp / *dirty / *stained / *wet*, all of which apparently involve closed-scale adjectives, would need an explanation.

We will see that, in Mandarin resultative compounds, restrictions on V_2 are quite different and, apparently, the contrast in (22) found in English resultative construction does not hold.

5.2.6 The postverbal NP and the argument structure of the resultative construction

Many researchers have assumed that the post-verbal NP of fake-object resultatives is not an argument of the verb, while the postverbal NP of resultatives based on transitive verbs is (cf. Bresnan & Zaenen 1990, Jackendoff 1990, Napoli 1992, L&RH 1995, among others); in fact, L&RH (1995) argue that the lexical representation of a verb in a resultative construction does not differ from that of the verb in isolation. More generally, in resultatives where the result phrase is predicated of a non-subcategorized NP, the post-verbal NP is not an argument of the verb (cf. L&RH 1995)[11].

All these assumptions are mainly based on Carrier & Randall's (1992) remarks on resultative constructions. These authors observe that some processes, like middle formation, adjectival passives and nominalization apply to direct internal argument and they are allowed only for resultatives based on transitive verbs, while they are excluded for resultatives based on unergative verbs, including those transitive-based resultatives with an unselected object. See the examples in (26), (27) and (28).

(26)   a. *He hammered the metal flat.* (Transitive-based resultative)
       b. Middle formation: *This metals hammers flat easily.*
       c. Adjectival passive: *The hammered-flat metal.*
       d. Nominalization: *The hammering of the metal flat.*
          (From Goldberg 1995:182)

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[11] Note that, as we have seen above (cf. 5.2), resultative phrases predicated either of fake objects or of non-subcategorized NPs can be found both with unergative verbs and also with some transitive verbs, e.g. *eat* and *drink* (cf. ex. in 5), i.e. those verbs that allow intransitive uses with an unspecified object interpretation (cf. L&RH 1995:37-38).

(27)   a. *He drove his tires bold.* (Unselected object)
       b. Middle formation: **Those tires drive bald easily.*
       c. Adjectival passive: **The driven-bald tires.*
       d. Nominalization: **The driving of the tires bald.*
          (From Goldberg 1995:182)

(28)   a. *He ran the pavement thin* (Unergative-based resultative)
       b. Middle formation: **This pavement runs thin easily.*
       c. Adjectival passive: **The run-thin pavement.*
       d. Nominalization: **The running of the pavement thin.*
          (b and c are quoted from L&RH 1995:43)

However, Goldberg (1995) points out that middle constructions with transitive-based resultatives are not always allowed, as those in the examples in (29), from Goldberg (1995:182).

(29)   a. **The washer loads fully easily.*
       b. ** His face washes shiny clean easily.*

Moreover, Jackendoff (1990) observes that most of the adjectival passives and nominalizations based on transitive resultatives are ungrammatical, as those in the examples in (30) and (31), from Goldberg (1995:183).

(30)   a. **The washed-shiny-clean face*
       b. **The shot-dead man*

(31)   a. **The washing of the face shiny clean.*
       b. **The shooting of the man dead.*

Also, Goldberg (1995:183) further notices that transitive verbs for which an internal argument is clearly present cannot always occur in the three kinds of processes considered above, as it is shown in (32).

(32)   a. *This movie watches easily.*   vs.   b. **This movie sees easily.*
       c. *The murdered man.*   vs.   d. **The killed man.*
       e. *The persuasion of people to new faiths.* vs.   f. **The persuasion of people to be quiet.*

Given such evidence, Goldberg (1995) concludes that, even though it is true that, if an NP occurs in the three constructions above, i.e. middle, adjectival passive and nominalization, then it is an argument, the converse is not true. Therefore, these constructions cannot prove that the NP present in resultatives based on unergative verbs (including those with an unselected objects) is not an argument. In fact,

Goldberg (1995) notices that, given a proper context, resultatives with an unselected object are more acceptable in the middle construction.

Middle constructions have some specific requirements: the unexpressed agent argument must be indefinite (and is typically interpreted as volitional); the patient subject argument must have a particular inherent property which makes it primarily responsible for the property expressed in the predicate phrase. Goldberg (1995) points out that are precisely these constraints that make resultatives with an unselected object incompatible with middles. First of all, resultatives with a fake (reflexive) object are coreferential with the subject and thus violate the indefiniteness requirement: *he cries asleep easily*. Secondly, she observes that resultatives with unselected objects are usually used to express the idea that the action performed was done excessively; this is in contrast with the requirement that the patient subject argument must have a particular inherent property, which makes the above mentioned argument primarily responsible for the property expressed in the predicate phrase: *that pavement runs thin easily* (because of an inherent quality of the pavement). Lastly, resultatives with an unselected object are often used to express a negative outcome. This is in contrast with the volitionality of the unexpressed agent generally found with middles. However, as we have mentioned above, Goldberg (1995) points out that, given a proper context, resultatives with unselected objects are more likely to occur in middles. For example, given a context where "a farmer has had such trouble with stray dogs attacking his chickens that he breeds the chickens such that they wake up easily upon hearing any barking" (p.185), apparently it is possible to form a middle like *his chickens bark awake easily*. Therefore, apparently resultatives with unselected object are generally not acceptable with middles due to semantic reasons, which have nothing to do with the fact that unselected objects are not arguments of the verb.

We cannot do justice in this thesis to the great variety of approaches and positions regarding the argument structure of the resultative constructions. We will just briefly mention some of the main approaches; the reader can refer to the cited works for further details. In 5.2.2, we have already mentioned the position of L&RH (1995) on the post-verbal NP of the resultative construction: the lexical representation of a verb in a resultative construction does not differ from that of the verb in isolation and thus the postverbal NP of a resultative construction based on a transitive verb acts as an argument of the verb. In contrast, Hoekstra (1988, 1992) assumes an uniform

syntactic account for all resultative constructions: the resultative phrase and the NP it is predicated of always form a small clause, independently of what kind of verb is found in the construction. The predication relation is always encoded syntactically in a clausal structure. According to this approach, in a transitive-based resultative construction the verb does not project its argument structure in the same way as it does when used in isolation, since in a resultative construction they appear without an NP object, selecting a small clause, as it is shown in (33).

(33)   Terry [$_{VP}$ wiped [$_{SC}$ the table clean]]

Jackendoff (1990) gives an account of the resultative construction in terms of the 'superordinate adjunct rules': these rules subordinate the meaning and the syntax of the verb to a newly introduced predicate, i.e. a 'superordinate adjunct'. According to this approach, the resultative construction is a constructional idiom, since the conceptual structure and the syntactic structure of the construction are lexically given, and the conceptual structure of the idiom is inserted as a variable. According to Jackedoff (1990), the postverbal NP is an adjunct, not an argument (for evidence against this point, cf. Goldberg 1995:186-187).

Another semantic approach to the resultative construction is the one proposed by Van Valin (1990) in the framework of Role and Reference Grammar (e.g. Van Valin 1990). In this framework, the mapping between the semantic representation of a predicate and the morpho-syntactic expression is mediated by the assignment of two macroroles to the arguments, i.e. actor and undergoer. Van Valin uses an aspectual approach to account for resultative constructions, using a predicate decomposition based on Dowty (1979): he claims that the resultative phrase in a resultative construction is always predicated of the argument of the predicate BECOME (STATE) in the logical structure of the verb. According to Van Valin, only achievements and accomplishments are possible in a resultative construction, since they are the only verb types that have this substructure in their logical structure [12]. Since in achievements and accomplishments the state is always predicated of an undergoer argument, Van Valin suggests that the resultative phrase must be predicated of an undergoer.

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[12] For a critique on this position, cf. Goldberg (1995:187-188) and L&RH (1995:71-72).

Goldberg (1995), adopting a Construction Grammar approach, argues that the occurrence of resultatives can be predicted in purely semantic terms: "Resultatives can only be applied to arguments which potentially undergo a change of state as a result of the action denoted by the verb" (p. 188). The argument, thus, must be a kind of patient. In the constructionist approach, the resultative construction is independent of the verb which instantiates it. Constructions have semantics and are associated with a particular argument structure: the construction itself can add a patient argument. The verb, with its intrinsic semantic representation, is integrated with the meaning directly associated with the construction. In this way, Goldberg (1995) can also account for fake objects cases, since the post-verbal NP is an argument of the construction and not necessarily of the main verb. A construction which adds a patient argument to the inherent argument structure of the verb allows the resultative phrase to be predicated of a patient argument (as predicted) and, at the same time, allows the patient argument to be coreferential with the agent argument[13]. For a detailed summary and critique on some of the main positions, and for other approaches, cf. Goldberg (1995:185-188), L&RH (1995:62-77).

In the next chapter we will present Ramchand's (2008) syntactic approach, which will be adopted in the analysis of Chinese resultative compounds.

5.2.7 Summary

Summing up the discussion presented in the previous sections, we have shown that English resultative constructions can have two patterns (transitive or intransitive), i.e. NP_1 V NP_2 XP or NP_1 V XP, and can be based either on transitive or on intransitive verbs. In resultative constructions based on transitive verbs, the postverbal NP is subcategorized by the verb. In contrast, resultatives based on intransitive verbs, including those transitive verbs used as intransitives with an unspecified object (e.g. *eat*), present either a fake object, or a non-subcategorized object, or an inalienably possessed NP, which the resultative phrase is predicated of. Resultative constructions are causative predicates and are usually transitive; however, there are intransitive resultative constructions too, i.e. those based on unaccusative verbs, where the

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[13] Another constructionist view of the resultative construction is given in Goldberg & Jackendoff (2004), who argue that the resultative construction is made up of a family of sub-constructions (they single out four major types), which have related but not identical syntax and semantics. They claim that the semantic argument structure of the constructional subevent determines the syntactic argument structure of the sentence by general principles of argument linking.

resultative phrase further specifies the result state implied by the verb itself, which are non-causative (cf. 5.2.1). Different approaches and positions have been proposed to account for the argument structure of resultative constructions (e.g. Hoekstra 1988 and 1992, Jackendoff 1990, Van Valin 1990, Goldberg 1995, L&RH 1995; cf. 5.2.6).

Resultative constructions generally seem to obey the Direct Object Restriction (DOR), which predicts that, in a resultative construction, the resultative phrase is predicated of the object and not of the subject; furthermore, this restriction also predicts that the resultative phrase cannot be predicated of NPs that are not direct objects (cf. 5.2.2). However, we have shown that there are some violations of the DOR, where the result phrase can be predicated of the subject (e.g. *she kicked free*, cf. RH&L 2001). Given these cases, RH&L (2001) argue that the DOR works just by chance; they argue that the reason why the DOR seems to hold more often than not, and seems to be empirically correct, lies in the causative event structure associated to resultatives and in the transition of force involved by most transitive verbs (cf. 5.2.2.1).

Actually, some verbs can appear in both transitive and intransitive pattern resultatives (e.g. *he coughed himself awake* vs. *he coughed awake*; *she wriggled herself free* vs. *she wriggled free*; cf. 5.2.2.2). In order to preserve the DOR, some authors (e.g. L&RH 1995) have proposed that these verbs have a dual classification, i.e. they can be both unergatives and unaccusatives. However, other authors try to explain this in a different way; for example, Goldberg & Jackendoff (2004) argue that this behaviour does not depend on the general verb class of the verb but rather on its specific semantics. Differently, RH&L (2001) propose that the choice of the resultative pattern depends on the structure of the event, rather than on the syntactic classification of the verb or on the semantic type of the result XP: if a verb-result combination can express both temporally dependent and temporally independent events, then it may be found in both resultative patterns.

Different constraints have been proposed for resultative constructions; Goldberg (1995), for example, proposes the Animate Instigator Constraint, according to which only animate instigator arguments are acceptable as subjects in transitive resultative constructions. Moreover, aspectual and temporal constraints have been proposed (cf. Van Valin 1990, Goldberg 1995). L&RH (2001) suggest that what really matters is the absence in the causal chain of an intervening event, which in some cases is

equivalent to temporal contiguity, but not always; only in the case of the bare XP (intransitive) pattern, the two subevents are temporally dependent (cf. 5.2.3).

As to the kind of verbs that can appear in resultative constructions, generally, both transitive and intransitive verbs are included. However, L&RH (1995) point out that stative verbs and inherently directed motion verbs, both transitives (e.g. *smell*, *take*) and unaccusatives (e.g. *remain*, *come*), cannot appear with resultative phrases (cf. 5.2.4). As for the result APs, English imposes different restrictions on the kinds of APs that can appear in a resultative construction: for example, present or past participle adjectives cannot occur as resultative predicates. Moreover, gradable, closed-scale adjectives seem to be preferred, even though some non-gradable adjectives can occur as well, as e.g. *dead*. However, some closed-scale adjectives seem not to be allowed, as shown by the following contrasts: *he wiped it clean / dry / smooth / *damp / *dirty / *stained / *wet*.

In the next section, we will provide an overview of the main characteristics of Chinese resultative compounds and we will compare them with the English resultative construction, highlighting the differences in properties and constraints between these two types of constructions.

5.3 Chinese resultative compounds

Chinese resultative compounds are one of the most controversial issues in the Chinese linguistics literature. In a resultative verb compound (also called verb-complement constructions; cf. Zhu 1981, Huang 2007)[14] the two constituents are in a causal relation (cf. Li 1991): the resultant state expressed by the second constituent is the result of the event expressed by the first constituent. These compounds have been widely debated and, due to their nature, have contributed to the theory of argument structure and to the theory of lexical-semantics interface. As we will see in the next chapter, different approaches to the formation of resultative verb compounds have

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[14] We will just deal with resultative compounds, setting apart the syntactic resultative constructions. Resultative phrases are defined by Li (2005) as biclausal constructions, where the verb on the left, denoting the causing event is followed by the functional morpheme 得 *de,* which is followed by a verb phrase indicating the resulting event:

他	激动	得	流出	了	眼泪。
tā	*jīdòng*	*de*	*liú-chū*	*le*	*yǎnlèi*
He	excited	DE₂	drip out	ASP	tears

'He got so excited as to come to tears.'

For these constructions, cf. Huang (1988, 2006), Cheng & Huang (1994), Sybesma (1999), Li (2005), among others.

been proposed: lexical (e.g. Li Y. 1990, 1995), syntactic (e.g. Huang 1992, 2006, Zou 1994, Sybesma 1999), both lexical and syntactic (Cheng 1997), constructionist (Huang 2007). In the following sections, we will discuss the different types of resultative compounds found in Chinese, compare them with English resultative constructions and show that many of the restrictions found in English resultative constructions do not hold for Chinese resultative compounds.

5.3.1 Types of resultative compounds

Chinese resultative compounds are formed by two verbal constituents. The main verb can usually be any transitive or unergative verb, but it can also be an unaccusative verb or, in some cases, a stative verb. The second verb is (more often than not) a deadjectival verb or an unaccusative verb in general, but in some cases stative verbs can be found as well. We will return to the restrictions on the possible constituents later on.

Resultative compounds can be found in two different patterns, as shown in (34):

(34)   a. $NP_1 V_1$-$V_2 NP_2$ (transitive)
       b. $NP_1 V_1$-V_2 (intransitive)

Resultative compounds built according to the transitive pattern can be further classified into different types. In one type, V_1 is a transitive verb and NP_2 is a direct object subcategorized by V_1, as in the examples in (35):

(35)   a. 张三   摇醒   了   李四。
          Zhāngsān   yáoxǐng   le   Lǐsì
          Zhangsan   shake-awake ASP   Lisi
          'Zhangsan shook Lisi awake (Zhangsan shook Lisi and as a result Lisi awoke).'
       b. 他   踢破   了   我   家   的   门 。
          tā   tīpò   le   wǒ   jiā   de   mén
          he   kick-break ASP   I   house DE   door
          'He kicked the door of my house broken (He kicked the door of my house and as a result the door broke).'

Moreover, there are transitive pattern resultatives with an unergative V_1 and an unselected NP object, as in (36):

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(36) a. 他 跑丢 了 一 只 鞋。
    tā pǎodiū le yī zhī xié
    he run-lose ASP one CL shoe
    'He ran one of his shoes lost (He ran and as a result he lost one of his shoes).'

   b. 他 哭湿 了 手帕。
    tā kūshī le shǒupà
    he cry-wet ASP handkerchief
    'He cried the handkerchief wet (He cried and as a result the handkerchief got wet).'

Another type of transitive resultative compounds is represented by those including a transitive V₁ with a non-subcategorized NP object. See the examples in (37):

(37) a. 他 踢破 了 球鞋。
    tā tīpò le qiúxié
    he kick-break ASP sneaker
    'He kicked his sneakers broken (He kicked (e.g. the ball) and as a result his sneakers broke).'

   b. 他 喝干 了 杯子。
    tā hē-gān le bēizi
    he drink-dry ASP glass
    'He drank the glass dry'
    (From the PKU corpus)

It should be noted that examples like the one in (37b), which in English are very common, e.g. *I ate the plate clean*, *we drank the pub dry*, etc., in Chinese are rare, e.g. ?吃干净了盘子 *chī gānjìng le pánzi* 'eat the plate clean' (cf. Yin 2007:84).

Lastly, a further type of resultative compounds found in the transitive pattern has a transitive or an unergative verb as V₁, and an NP₂ which is not subcategorized by V₁, but nevertheless represents an inalienably possessed NP, normally a body part, as in (38)[15].

(38) a. 那天 他 哭红 了 眼睛、 哭哑 了 嗓子
    nàtiān tā kūhóng le yǎnjīng kūyā le sǎngzi
    that day he cry-red ASP eye cry-hoarse ASP throat
    'That day, he cried his eyes red, he cried his throat hoarse'
    (http://blog.cctv.com/html/29/26929-682345.html)

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[15] As Lisa Cheng (p.c) pointed out, the example in (38c) is different from the others in that 吃饱 *chībǎo* 'eat-full' can stand by itself and does not require an object, i.e. 我吃饱了 *wǒ chībǎo le* 'I eat-full ASP = I ate myself full' (cf. ex. 40), while a resultative compound like 哭红 *kūhóng* 'cry-red', for example, cannot, i.e. *他哭红了 *tā kūhóng le* 'he cry-red ASP = He cried himself red'. We think that this depends on whether the result (V₂) can be predicated of the subject or not (on this issue, cf. 6.3.2.2); see the difference between 哭红 *kūhóng* 'cry-red' and 哭累 *kūlèi* 'cry-tired', the latter of which can be used with or without a postverbal NP: e.g. 他哭累了 *tā kūlèi le* 'he cry-tired ASP = He cried himself tired', 他哭累了眼睛 *tā kūlèi le yǎnjīng* 'he cry-tired ASP eye = He cried his eyes tired'.

b.我　看花　　　了　　眼睛。
wǒ　kànhuā　　le　　yǎnjīng
I　　read-blurred　ASP　eye
'I read my eyes blurred.'

c.我　吃饱　了　　肚子。
wǒ　chībǎo　le　　dùzi
I　　eat-full ASP　belly
'I ate my belly full'

The types of resultatives considered up to now are in line with English resultative constructions with a transitive pattern and, like their English counterpart, the result is always predicated of the object, i.e. they are object oriented.

As far as the intransitive pattern is concerned, two different types of resultative compounds are observed. The first type corresponds to the English bare XP resultatives, as shown in (39):

(39) a.我　　　累死　　　了。
wǒ　　lèisǐ　　le
I　　　tire-die　　ASP
'I got tired to death.'

b.瓶子　　破碎　　　　了。
píngzi　pòsuì　　　le
vase　　break-smash　ASP
'The vase broke into pieces.'

As their English counterparts, the resultative compounds in (39) are non-causative: V_1 already encodes a result and V_2 further specifies this result.

Another type of resultative compounds with an intransitive pattern corresponds to resultative constructions with a fake (reflexive) object in English, as in the examples in (40):

(40)　a.他　跑累　　　了。
tā　pǎolèi　　le
he　run-tired　ASP
'He ran (himself) tired.'

b.李四　　　笑疯　　　　了。
Lǐsì　　xiàofēng　　le
Lisi　　laugh-insane　ASP
'Lisi laughed (himself) insane.'

c.他　唱哑　　　了。
tā　chàngyā　　le
he　sing-hoarse　ASP
'He sang (himself) hoarse.'

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d. 她　吃饱　　　　了。
    tā　chībǎo　　le
    she　eat-full　　ASP
    'She ate (herself) full.'

These sentences, as it is clear from the translations, in English should have a fake reflexive object, which, according to Simpson (1983), being coreferential with the subject, is a device which allows the resultative phrase to be predicated of the subject (cf. 5.2.1, ex. 2). In Chinese, no fake object is involved and the V_2 is clearly predicated of the subject, i.e. these resultative compounds are subject-oriented.

In some particular cases, in transitive resultatives too V_2 can be predicated of the subject, as in the examples in (41).

(41)   a. 她　吃饱　　　　了　　饭。
        tā　chībǎo　　le　　fàn
        she　eat-full　　ASP　　food/rice
     'She ate herself full (with food).'
      b. 他　喝醉　　　　了　　酒。
        tā　hēzuì　　le　　jiǔ
        he　drink-drunk　ASP　　alcohol
     'He drank himself drunk (with alcohol).'

These cases are very restricted; for example, in (41a) the object 饭 *fàn* 'food/rice', as we have seen, represents a dummy object (cf. 1.4.1.1.2 and 1.4.1.2); it is not a fully referential argument but it is required to give the verb 吃 *chī* 'eat' an intransitive/unspecified object reading. As highlighted by Huang (2006), with a full object such as 那碗饭 *nà wǎn fàn* 'that bowl of rice', subject predication seems to be excluded, and thus the example in (42), from Huang (2006:5), is unacceptable:

(42) *张三　　吃饱　了　那　碗　饭 ／ 两　碗　饭 ／ 几　碗　　饭
    Zhāngsān chībǎo　le　nà　wǎn　fàn / liǎng wǎn fàn / jǐ　wǎn　fàn
    Zhangsan eat-full ASP that bowl rice two bowl rice some bowl　rice
    'Zhangsan ate-full that bowl/two bowls/how many bowls of rice (?)'

However, this issue seems to be even more problematic; we will return on it in the next chapter, when dealing with the analysis of resultative compounds.

Lastly, we want to point out that resultative compounds can also be formed with ditransitive V_1s, as it is shown in the examples in (43).

(43)   a. 老师   教累   了。
       lǎoshī   jiāolèi   le
       teacher   teach-tired ASP
       'The teacher taught himself tired (The teacher taught (something to the
       students) and got tired.'
       b. 他 送累   了。
       tā sònglèi   le
       he give-tired   ASP
       'He gave himself tired (He gave (things away to others) and got tired).'
       (From Cheng & Huang 1994:194)
       c. 他 送酸   了   腿   了。
       tā sòngsuān   le   tuǐ   le.
       he give-sore   ASP leg   FP
       'He gave his legs sore (He gave gifts to other people until his legs got
       sore).'
       (From Cheng & Huang 1994:194)

In the examples in (43a) and (43b) V$_1$ is a ditransitive verb, but nevertheless the
compound shows the intransitive pattern. In contrast, the example in (43c) is a
transitive resultative compound with a ditransitive V$_1$ and a non-subcategorized object.

In 5.2.2.2, we have seen that some verbs in English have a variable behaviour (cf.
RH&L 2001, Goldberg & Jackendoff 2004) and can appear either in fake object
resultatives or in bare XP resultatives (cf. exx. 13 and 14). Huang (2006) notes that in
Chinese almost any intransitive (or intransitivized) action verb can appear in an
intransitive pattern resultative compound without requiring any object (neither a real
nor a fake object), e.g. (40) above; this option seems not to be restricted to particular
classes of verbs like in English. Huang (2006) tries to account for this difference
between English and Chinese[16], assuming as the basic idea that in Chinese unergative
resultatives may be analysed alternatively as unaccusatives (cf. also Sybesma 1992,
1999)[17]. However, it is not the case that all the unergative "versions" of transitive
verbs can be conceived in this way, and thus the behaviour of Chinese resultative
constructions, exemplified in (40), needs to be justified.

Huang (2006:18-19) adopts the structures proposed for resultatives by RH&L
(2001), according to which resultatives have either a causative or an inchoative

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[16] For another account of this difference, cf. Tang (1997).

[17] It has often been observed that the unergative/unaccusative distinction is not always clear-cut,
and that in fact some verbs may have a dual status (e.g. Hoekstra 1999, Mateu 2005).

template, and a subevent that specifies the manner in which the main event takes place, as shown in (44):

(44)　　a. Inchoative template:
　　　　　　[BECOME*<MANNER>* [x *<STATE>*]]
　　　　b. 'Pure' causative template:
　　　　　　[x CAUSE [BECOME*<MANNER>* [y *<STATE>*]]]
　　　　c. 'Causing-with-a-manner' causative template:
　　　　　　[x CAUSE*<MANNER>* [BECOME [y *<STATE>*]]]

According to Huang (2006:21), both the inchoative and the causative template can contain either an unergative verb or an unaccusative verb (45):

(45)　　a. Inchoative (1):
　　　　　　[BECOME*<UNERGATIVE>* [x *<STATE>*]]　(cf. 40a)
　　　　b. Inchoative (2):
　　　　　　[BECOME*<UNACCUSATIVE>* [x *<STATE>*]] (cf. 39)
　　　　c. Pure causative (1):
　　　　　　[x CAUSE [BECOME*<UNERGATIVE>* [y *<STATE>*]]]　(cf. 49b)
　　　　d. Pure causative (2):
　　　　　　[x CAUSE [BECOME*<UNACCUSATIVE>* [y *<STATE>*]]] (cf. 47b)
　　　　e. Causing with a manner:
　　　　　　[x CAUSE*<UNERGATIVE>* [BECOME [y *<STATE>*]]]] (cf. 37a)

Huang (2006:21) proposes that the difference in the distribution of certain types of resultative constructions in English and Chinese is due to the fact that, while in Chinese an unergative verb may be merged (or conflated) as a manner adjunct with an inchoative or causative light predicate BECOME or CAUSE, in English such merger is generally possible only with the light predicate CAUSE. However, the source of this difference is unknown.

5.3.2 Transitive and causative alternations

Chinese intransitive resultative verbs based on activity denoting V_1s (cf. ex. 36) allow an unergative-transitive alternation, as in (46):

(46)　　a. 他　　哭醒　　　　了。
　　　　　　tā　*kūxǐng*　　*le*
　　　　　　he　cry-awake　ASP
　　　　　　'He　cried (himself) awake.'

b. 他　哭醒　　　　了　小孩。
tā　kūxǐng　le　xiǎohái
he　cry-awake　ASP　child
'He cried the child awake (He cried and as a result the child awoke).'
(From Cheng & Huang 1994:190)

The alternation is possible exactly because Chinese allows the result to be predicated of the subject. In contrast, as we have seen, an unergative or transitive based resultative without an object in English would violate the DOR and is generally impossible: in order to allow the result to be predicated of the subject, a fake reflexive object, coreferential with the subject, is needed[18].

Moreover, Chinese allows resultative compounds with unaccusative V_1s to undergo the inchoative/causative alternation, as is shown in (47):

(47)　a. 他　累死　　　　了。
　　　　　tā　lèisǐ　le
　　　　　he　tired-die　ASP
　　　　　'He tired to death.'
　　　b. 这　件　事　累死　　　了　他。
　　　　　zhè jiàn shì lèisǐ　le　tā.
　　　　　this CL　matter tired-die ASP　he
　　　　　'This matter tired him to death.'

The same is possible in English as well (48), where, as we have seen, unaccusative verbs can be causativized by means of a null causative head (c.f. 2.4.2):

(48)　a. *The river froze solid.*
　　　b. *An unusually cold winter froze the river solid.*

However, unexpectedly, Chinese also allows resultatives with a transitive or unergative V_1 to causativize (49)-(50), which is impossible in English (51)-(52):

(49)　a. 他　哭醒　　　　了。
　　　　　tā　kūxǐng　le
　　　　　he　cry-awake　ASP
　　　　　'He　cried (himself) awake.'

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[18] However, Huang (2006) highlights that in some limited cases, the unergative-transitive alternation can be observed in English as well. In fact, as we have seen, RH&L (2001) point out examples of intransitive resultatives based on unergative verbs without a fake object (cf. exx. 13, 14 and 15). Huang (2006) notices that alternation in these cases is possible: *she kicks free* vs. *she kicked herself free*.

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b. 一　个　　恶梦　　　哭醒　　　　了　　他。
yī　ge　èmèng　kūxǐng　le　tā
one　CL　nightmare　cry-awake　ASP　he
'A nightmare caused him to cry (himself) awake.'

(50)　a. 我　喝醉　　　　了。
wǒ　hēzuì　le.
I　drink-drunk　ASP
'I drank (myself) drunk.'

b. 那　瓶　酒　喝醉　　　　了　全　桌　的　人。
nà　píng　jiǔ　hēzuì　le　quán　zhuō　de　rén
that　bottle　wine　drink-drunk　ASP　whole　table　DE　person
'(Drinking) that bottle of wine made everyone at the table drunk.'
(From Huang, Li & Li 2009:61)

(51)　a. *Mary cried herself sad.*
b. **That event cried Mary sad.*

(52)　a. *She quickly kicked free.*
b. **The threat of death quickly kicked her free.*
(From Huang 2006:9)

5.3.3 Restrictions on resultative compounds

5.3.3.1 An alternative to the DOR

The first point that clearly emerges from the previous section is that Chinese, as it is widely recognized in the literature (e.g. Huang 1992, 2006, Cheng & Huang 1994), violates the DOR. As we have seen, the DOR predicts that, in a resultative construction, the resultative phrase is always predicated of the object and thus, as a consequence, intransitive resultatives are ungrammatical (with the exception of passives and unaccusative verbs). However, examples like the one in (40) clearly demonstrates that in Chinese resultative compounds the resultant state may be predicated of the subject, without the intervention of any fake object. Huang (1992) proposes an alternative to the DOR for syntactic resultatives (resultative phrases, cf. fn.14). According to Huang, the principle determining what the Result V_2 is predicated of is based on a generalized theory of control (theory of predication by Williams 1980). The generalized theory of control incorporates a Minimal Distance Principle (MDP, cf. Rosenbaum 1967), according to which an empty pronoun (PRO or Pro) takes as its antecedent the closest potential antecedent. This principle predicts that a controlled PRO is controlled either by an object, if a (c-commanding) object exists (e.g. *John persuaded Bill to go*), or by a subject, if such object does not exist (e.g. *John tried to go*). Like the DOR, the MDP predicts object predication for the

transitive and causative patterns, and (surface) subject predication for the inchoative/unaccusative pattern. The MDP also correctly predicts subject predication for the unergative pattern, which has no postverbal objects, while the DOR does not allow constructions without an object. Huang (1992:127) further notices that, even though some resultative compounds obey to the MDP too, this is not always the case. According to him, this is due to the fact that the internal structure of compounds is not accessible to syntax[19].

The fact that in Chinese resultative compounds the resultant state may be predicated of the subject does not come as a surprise, since, as we have seen, recently the validity of the DOR has been questioned for English too: apparently English too allows some resultatives to be predicated of the subject, e.g. *he followed Lessie free of his captors* (cf. 5.2.2.1 and 5.2.2.2). As we have seen, RH&L (2001) propose an explanation based on the force recipient. According to Huang (2006), the Force Recipient approach works better than the DOR for Chinese as well, at least for some transitive resultative compounds. First of all, Huang observes that some resultative compounds with a non-referential object (e.g. ex. 41) require subject predication; moreover, the more referential an object is, the more object predication is natural (e.g. ex. 42). In addition, Huang observes that, in order to understand whether an object is a force recipient or not, semantic, contextual or pragmatic factors may be considered. For example, he observes that in the case of a resultative compound such as 追累 *zhuīlèi* 'chase-tired' object predication is favoured (53), while in the case of 看累 *kànlèi* 'look-tired' subject predication is more likely (54). The referentiality of the objects seems not to matter and the predication seems to be sensitive to the degree of agentivity of V_1[20].

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[19] Moreover, Huang (2006:12) observes that, while in the case of resultative phrases the MDP works better than the DOR, it nevertheless cannot account for the differences between English and Chinese and for why English does not bear out all the interpretative possibilities allowed by the MDP.

[20] However, note that the nature of V_2 seems to matter too. In fact, Huang (2006) observes that the verb 腻 *nì* 'bored' seems to be oriented toward an agent but not toward a patient or affectee. Therefore, both 追腻 *zhuīnì* 'chase-bored' and 看腻 *kànnì* 'watch-bored' have only subject-oriented interpretations.

(53)　a. Object predication:

　　　张三　　　追累　　　了 李四/谁 /那 个 人/ 他/ 三个 人
　　　Zhāngsān zhuīlèi　le Lǐsì shéi nà ge rén　tā sān ge rén
　　　Zhangsan　chase-tired ASP Lisi/ who/ that CL person/ he/ three CL person
　　　'Zhangsan chased Lisi/ who/ that person/ him/ three persons/ and made him /
　　　them tired.'
　　　(From Huang 2006:5)

　　b. Subject predication (some restrictions)

　　　张三　　　追累　　　了 李四 / ?谁/ ?那 个 人 / ?他 / *三 个 人
　　　Zhāngsān zhuīlèi　le Lǐsì shéi nà ge rén　tā　sān ge rén
　　　Zhangsan chase-tired ASP Lisi　who that CL person he　three CL person
　　　'Zhangsan chased Lisi/ ?who/ ?that person/ ?him/ *3 people and got tired'

(54)　a. Object predication (generally unavailable):

　　　*张三　　　看累　　　了 李四/谁/ 那 个 人/ 他/ 三　个 人
　　　Zhāngsān kànlèi　le Lǐsì shéi nà ge rén tā sān　ge rén
　　　Zhangsan　look-tired ASP Lisi　who that CL person he three　CL person
　　　*'Zhangsan looked Lisi / who / that person / three people and got tired'

　　b. Subject predication (mostly available):

　　　张三　　　看累　　　了 李四/谁/ 那 个 人/ 他/ *三　个 人
　　　Zhāngsān kànlèi　le Lǐsì shéi nà ge rén / tā　sān　ge rén
　　　Zhangsan　look-tired ASP Lisi　who that CL person he three　CL person
　　　'Zhangsan looked Lisi/ who/ that person/ him/ *three perople and got tired'
　　　(From Huang 2006:5)

According to Huang (2006), the contrast above could be explained in terms of force recipient: intuitively, a chasing event is more likely to exert 'force' on the person being chased than a looking event on the person being looked at. Therefore, the notion of force recipient would seem to be more adequate than the DOR. However, Huang (2006) points out some weaknesses of this account: above all, the assumption according to which a result is predicated of a force recipient if there is one, otherwise it is predicated of the subject, seems to be questionable. According to Huang, it is not clear why a subject, which by definition is not a force recipient, can be the target of a resultative and why, in the absence of a force recipient, the default is the subject and not the other arguments. Huang suggests that what links a force recipient and a subject is that, compared to topic or adjuncts (which are not arguments), the former are both prominent arguments (for further details, cf. Huang 2006:13-15). This leads Huang to propose that the Force Recipient rule can be simplified and reduced to an updated version of Huang's (1992) Minimal Distance Principle (MDP): "In a resultative construction, the Result XP is predicated on the closest prominent argument." (Huang

2006:14). When both the subject and the prominent object are present, the prominent object is closer to the result XP, but in the absence of a prominent object, the subject is the closest.

5.3.3.2 The Animate Instigator Constraint

As we have seen (5.2.3), Goldberg (1995) points out that English resultatives are subject to the Animate Instigator Constraint, according to which the subject of a resultative construction can only be an animate instigator argument, thus sentences like the one in (51) are unacceptable:

(55)　　a. *The hammer pounded the metal flat.* (cf. 16b)

   In contrast, this constraint seems not to hold in Chinese. In fact, Chen J. (2008) points out that also inanimate instigators (like instruments) are allowed as subjects of a resultative compound. See the examples in (56).

(56)　　a. 锤子　　　锤平　　　　了　　那　　块　　金属。
           chuízi　　*chuípíng*　　*le*　　*nà*　　*kuài*　　*jīnshǔ*
           hammer　　hammer-flat　ASP　that　CL　　metal
           'The hammer hammered that metal flat.'
           (From Chen J. 2008:32)
    b. 她　仰起　　头，眼泪　洗湿　　　了　　她　　的　　脸。
         tā　*yǎngqǐ*　*tóu, yǎnlèi*　*xǐshī*　　*le*　　*tā*　*de*　　*liǎn*
         she　look-up　head tear　wash-wet　ASP　she　DE　face
         'She looked up, the tears washed her face wet.'
         (From the PKU corpus)
    c. 第六　　　天，挖土机手　挖断　　　了 一　根　歪脖　　　　树
         dìliù　*tiān wātǔjīshǒu*　*wāduàn*　*le yī*　*gēn wāibó*　　*shù*
         the sixth day　boom cat　dig-break　ASP one　CL　crooked-nake　tree
         的　　　　树根
         de　　　*shù gēn*
         DE　　　tree roots
         'The sixth day, the boom cat dug and broke the root of the crooked tree.'
         (From the PKU corpus)

   Therefore, apparently these resultative verbs allow different kinds of causes and do not require a volitional agent (see also as the case of the causative version of alternating verbs; cf. 2.4.2 and 4.5).

5.3.3.3 Constraints on V₁ and V₂

Chinese resultative compounds are very productive; apparently, new compounds can be created on the spot (cf. Chen J. 2008). According to Chen J. (2008), the great productivity of Chinese compounds is also shown by the flexibility of combination of the two verbs: the same V₁ can combine with many different V₂s, e.g. 踢破 *tīpò* 'kick-broken', 踢累 *tīlèi* 'kick-tired', 踢开 *tīkāi* 'kick-open', 踢倒 *tīdǎo* 'kick-fall'; in the same way, the same V₂ can combine with different V₁s, e.g. 写累 *xiělèi* 'write-tired', 看累 *kànlèi* 'read/look/watch-tired', 骑累 *qílèi* 'ride-tired', 跑累 *pǎolèi* 'run-tired', 玩累 *wánlèi* 'play-tired'.

The V₁ of a resultative compound is not subject to particular constraints. Almost all transitive and unergative verbs can appear as V₁. Moreover, some unaccusative verbs too can appear as V₁, e.g. 破碎 *pòsuì* 'break-smash (break into pieces)', 醉倒 *zuìdǎo* 'get drunk-fall'.

Chen J. (2008:41) notes that unaccusative verbs that denotes only a state change, like 死 *sǐ* 'die' or 来 *lái* 'come', cannot occur as V₁s, e.g. *死哭 *sǐkū* 'die-cry'[21], *来 烦 *láifán* 'come-annoy': *张三死哭了李四 *Zhāngsān sǐkū le Lǐsì* 'Zhangsan die-cry ASP Lisi = Zhangsan died and as a result Lisi cried'; *张三来烦了李四 *Zhāngsān láifán le Lǐsì* 'Zhangsan come-annoy ASP Lisi = Zhangsan came and as a result Lisi was annoyed' (examples adapted from Cheng 2008:41). In contrast, as we have mentioned, unaccusative verbs like 破 *pò* 'break' or 冻 *dòng* 'freeze'[22], which already encode a result, can occur as V₁ in resultative compounds, e.g. 破碎 *pòsuì* 'break-smash (break into pieces), 冻死 *dòngsǐ* 'freeze-die (freeze to death)', 冻硬 *dòngyìng* 'freeze-hard'. In this case, as we have seen for English, e.g. *break* (cf. 5.2.4), the resultative complement further specifies the resultant state, thus it is allowed because it does not add a further delimitation.

In the case of verbs such as 来 *lái* 'come', we have already seen the reasons for this constraint in the English resultative constructions (cf. 5.2.4). Verbs like 来 *lái* 'come' or 到 *dào* 'arrive' specify an achieved endpoint and an attained location, i.e.

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[21] Lisa Cheng (p.c.) pointed out that 死哭 *sǐkū* 'die-cry' can be used but with a different meaning, something like 'keep on crying'.

[22] The verb 冻 *dòng* 'freeze' seems to be a labile verb: 水管里的水冻了 *shuǐguǎn lǐ de shuǐ dòng le* 'The water in the pipes froze' (from the Nciku dictionary) vs. [我] 冻了凉快豆腐 *wǒ dòng le liángkuai dòufu* 'I froze two pieces of bean curd' (HDYC 1999).

they are achievements. Since they are lexically delimited and specify a change of location, directed motion verbs cannot occur with a resultative phrase, since such phrase would provide a further delimitation (cf. Tenny 1987, L&RH 1995, and 5.2.4 above).

As far as the verb 死 *sǐ* 'die' is concerned, it is an unaccusative verb of disappearance, characterized for describing a non-reversible change (cf. Bertinetto 1986). It seems to be impossible for such a verb to have its resultant state further specified, and thus it cannot occur with a resultative complement. Therefore, verbs of change of state that already encode a result can appear as V_1 of a resultative compound only if their result state can be further specified.

In 5.2.4, we have seen that resultative phrases are generally incompatible with all stative verbs (cf. Hoekstra 1992, L&RH 1995). However, Chen J. (2008) points out that some stative verbs too are allowed as V_1s in Chinese resultative compounds, as in the example (57), from Chen J. (2008:30).

(57)　他　　坐坏　　　了　　椅子。
　　　tā　*zuòhuài*　*le*　*yǐzi*
　　　he　　sit-break　ASP　chair
　　　'He sat the chair broken (broke the chair by sitting on it).'

Nevertheless, it should be noted that verbs of spatial configuration, like 坐 *zuò* 'sit' or 站 *zhàn* 'stand', have both active and stative properties (cf. 4.2.4). The gloss given in (57) seems to indicate that 坐 *zuò* 'sit' is used in its 'assume position' sense (i.e. an animate being assumes a particular position under his/her/its own control), therefore it should be considered as an unergative verb. However, it could also be interpreted in its 'maintain position' sense (i.e. the maintenance of a particular spatial configuration by an animate being), which is the only possible interpretation in examples like those in (58):

(58) a. [...] 有时　　　在 人家　门口　　等，一　　　　等　　　就是
         yǒushí   *zài rénjiā ménkǒu děng yī*   *děng*   *jiùshì*
         sometimes at sb. else doorway wait as soon as wait   be
         半夜，　　站累　　了　就 蹲下，　　　蹲累　　　　　　　了
         bànyè   *zhànlèi* *le jiù dūnxià*   *dūnlèi*   *le*
         midnight stand-tired ASP then squat-down squat on the heels-tired ASP
         再　　站起来。
         zài   *zhànqǐlái*
         again   stand up
      '[...] [he] sometimes waited in front of other people's doorway, waited until midnight, he got tired from standing (stood-tired), then squatted down. When he got tired from squatting (squatted-tired), he stood up again.' (From the PKU corpus)

   b. [...] 地上　　　　　潮湿 寒冷。 她　蹲累　　　了　只好
        dìshàng   *cháoshī hánlěng tā dūnlèi*   *le*   *zhǐhǎo*
        on the ground moist   cold   she squat-tired   ASP   can only
        坐 下来
        zuòxialái
        sit down
      '[...] The ground was moist and cold. She got tired from squatting (squatted-tired), so she had no choice but to sit down' (From the PKU corpus)

   c. [...] 在　　　河沿　　上　　　　站腻　　　了[...]
        zài   *héyán*   *shàng*   *zhànnì*   *le*
        at   riverside on   stand-bored ASP
      '[...] [it] got bored from sitting (stood-bored) on the riverside [...]' (From 在河边上度过的童年 'A childhood spent on the riverside' by You Yong: www.china-zywx.com/sw/xscl/sanwen/.../176.html)

   d. 两　　个　人　在　　咖啡厅　　里　　坐腻　　　了 [...]
        liǎng *ge* *rén* *zài*   *kāfēitīng*   *lǐ*   *zuònì*   *le*
        two   CL   person at   café   in   sit-bored   ASP
      'Two people got bored from sitting (sat-bored) in a café [...]' (Google search, September 2009)

The V$_1$s of the resultative compounds in (58) are clearly statives. Therefore, in Chinese the restriction according to which stative verbs cannot occur with a resultative phrase apparently does not hold.

Verbs that can appear as V$_2$s in resultative compounds are more restricted than those that can appear as V$_1$s: they are mostly deadjectival verbs or other verbs of change of state such as 断 *duàn* 'break', 坏 *huài* 'ruin', 死 *sǐ* 'die', i.e. mainly those verbs that could generally be also used as causatives in the previous stages of the language and that in Mandarin Chinese can only be used intransitively (cf. chapter 3), unless a light verb (cf. chapter 4) or another verbal root is added.

Moreover, some stative verbs too can be found as V₂s, usually those denoting mental states, like 懂 *dǒng* 'understand' or 会 *huì* 'know'. However, Gu (1992) highlights that verbs such as 爱 *ài* 'love' or 恨 *hèn* 'hate', which may only be used as individual-level predicates, cannot act as V₂s in resultative compounds, because only verbs capable of expressing change of state, including deadjectival verbs (which are related to stage-level adjectives), are allowed as V₂s in resultative verb compounds[23].

Lastly, even though transitive and unergative verbs are excluded as V₂s, e.g. *吓跳 *xiàtiào* 'frighten-jump', *吓喊 *xiàhǎn* 'frighten-scream' (vs. 吓跑 *xiàpǎo* 'frighten-run away', 吓醒 *xiàxǐng* 'frighten-awake', cf. Cheng & Huang 2004:194), nevertheless verbs of emotion relation, like 哭 *kū* 'cry' and 笑 *xiào* 'laugh', can appear as V₂s in resultative compounds, e.g. 骂哭 *màkū* 'scold-cry', 逗笑 *dòuxiào* 'amuse-laugh'. As we have seen in 4.5, apparently these verbs can also be causativized by means of a light verb, in which case the causee is interpreted as having no control over the action denoted by the predicate, thus the eventuality can be considered as being directly (externally) caused (cf. Duffield, to appear, and the discussion in 4.4).

Table 1 summarizes the types of verbs that can be found as V₂s in resultative compounds.

Table 1 – Types of V₂s in resultative compounds

Type of V₂	Examples
Deadjectival[24]	饱 *bǎo* 'full', 病 *bìng* 'sick', 热 *rè* 'hot', 潮 *cháo* 'moist', 腻 *nì* 'bored', 干 *gān* 'dry', 干净 *gānjìng* 'clean', 平 *píng* 'flat', 疯 *fēng* insane', 醉 *zuì* 'drunk', 花 *huā* 'blurred', 烦 *fán* 'annoyed', 累 *lèi* 'tired', 红 *hóng* 'red', 湿 *shī* 'wet', 脏 *zāng* 'dirty'
Unaccusative	走 *zǒu* 'leave', 跑 *pǎo* 'run away', 丢 *diū* 'lose', 死 *sǐ* 'die', 碎 *suì* 'smash', 断 *duàn* 'break', 坏 *huài* 'ruin', 开 *kāi* 'open', 醒 *xǐng* 'wake up/awake'

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[23] Sybesma (1992:17) points out that stative verbs like *know* and *fear* can, in some contexts, get an eventive reading, e.g. *we were just fearing that he would come in – when he came in*.

[24] Items specified for both adjectival and verbal features (cf. 4.3.2). Note that, among these verbs, some can act as transitive as well. For 累 *lèi* 'tired', see 4.4 (ex. 52f). Another verb of this kind is 烦 *fán* 'annoyed', e.g. 我烦了 *wǒ fán le* 'I annoyed ASP = I'm fed up' vs. 你别再烦我了 *nǐ bié zài fán wǒ le* 'you not again annoyed I ASP = don't trouble me again'.

Unergative	哭 *kū* 'cry', 笑 *xiào* 'laugh'
Stative	懂 *dǒng* 'understand', 会 *huì* 'know'

Chen J. (2008:39) singles out five semantic classes of verbs that cannot occur as V₂ in a resultative compound:

- Verbs of manner of motion (internally or externally caused): e.g. 滑 *huá* 'slide', 滚 *gǔn* 'roll', 蹦 *bèng* 'leap', 流 *liú* 'flow', 跳 *tiào* 'jump';

- Verbs of volitional action (internally caused): e.g. 吃 *chī* 'eat', 喝 *hē* 'drink', 唱 *chàng* 'sing', 买 *mǎi* 'buy', 说 *shuō* 'speak', 推 *tuī* 'push';

- Verbs of emotion (internally caused): 爱 *ài* 'love', 恨 *hèn* 'hate', 憎 *zèng* 'loathe';

- Posture verbs (internally caused): 站 *zhàn* 'stand', 坐 *zuò* 'sit', 躺 *tǎng* 'lie down', 蹲 *dūn* 'squat';

- Verbs meaning 'stop' or 'close' (internally or externally caused): 停 *tíng* 'stop', 关 *guān* 'close', 闭 *bì* 'shut, close'.

As highlighted by Chen J. (2008), Mandarin, like English, is apparently sensitive to the distinction between internal and external causation: in general, internally caused verbs are not allowed as V2s of resultative compounds. Generally speaking, V2s of resultative compounds are externally caused verbs and we believe that this is due to the fact that resultative compounds are a causativizing strategy and, normally, verbs that can causativize are externally caused verbs.

However, Chen J. (2008) points out that some kinds of externally caused verbs are not allowed as V2s in resultative compounds. For example, verbs of manner of motion cannot occur in the V2 position of a resultative compound, even when they express externally caused events[25], i.e. when they act as unaccusatives, e.g. *推滚 *tuīgǔn* 'push-roll'[26]. However, even though the occurrence of these verbs as V2 seems to be somehow restricted, examples like those in (59) are apparently possible:

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[25] Verbs of manner of motion seem to show both unergative and unaccusative behaviour (cf. 4.2.4).
[26] In English most verbs of manner of motion manifest the causative alternation (cf. Levin 1993, L&RH 1995), e.g. *the ball rolled* vs. *I rolled the ball*.

(59) a. 他们　　记不起　　　　　一路　　　　　上　踢滚　了　多少
　　　　tāmen jì-bu-qǐ　　　　yīlù　　　　shàng tīgǔn le duōshǎo
　　　　they　cannot remember the whole journey on　kick-roll ASP how many
　　　　石块[...]
　　　　shíkuài
　　　　stone
　　　　'They cannot remember how many stones they kicked-rolled (rolled by kicking) [...]'
　　　　(From 董小宛 'Dong Xiaoyuan' by Gao Yang, chapter 14:
　　　　http://www.xiaoshuo.com/readbook/0015177_4254.html)
　　 b. [...]我 在 洞　　中　　的 水 里 不 小心，　　踢滑　　了
　　　　wǒ zài dòng zhōng de shuǐ lǐ bù xiǎoxīn tīhuá le
　　　　I　at hole middle DE water inside not be careful kick-slide ASP
　　　　一　　块　　石头[...]
　　　　yī kuài shítou
　　　　one CL rock
　　　　'[...]In the water in the middle of the hole I was not careful and I kicked-slid a rock (I made slid a rock by kicking at it)[...]'
　　　　(From 飘燃纸 'Floating burned paper', by Pan Xiaochun, chapter 4:
　　　　http://vip.book.sina.com.cn/book/chapter_105540_64560.html)

It is possible that it is the ambiguity of these verbs, which can be either internally or externally caused, what makes their use as V2s of resultative compounds restricted, although possible, as we have seen.

Moreover, Chen J. (2008) further points out that verbs of closure or ceasing, like 关 *guān* 'close' or 停 *tíng* 'stop', cannot occur as V2s of resultative compounds, e.g. *打关 *dǎguān* 'hit-close', *打停 *dǎtíng* 'hit-stop'. Chen J. points out that these verbs can express either externally or internally caused events and express a change of state; Chen J. observes that the constraint against this class of verbs seems to be idiosyncratic, especially considering that 开 *kāi* 'open', which is the antonym of 关 *guān* 'close' is often found as V2 of resultative compounds.

However, even though these verbs are less frequent as V2s of resultative compounds, sometimes they can be found in such usage, as is shown by the examples in (60):

(60) a. 因此　　悄悄　　走到　门外　　　　　去，把　门　　拉关　　了[...]
　　　　yīncǐ qiǎoqiǎo zǒudào ménwài　qù bǎ mén lāguān le
　　　　therefore quietly　walk to outside the door go　BA door pull-close ASP
　　　　'Therefore, [he] quietly walked outside, pulled the door close [...]'
　　　　(From 山野情 'Country feelings' by Yun Shangseng:
　　　　http://www.cuiweiju.com/files/article/fulltext/95/95521.html#5204216)

b. [...] 用　　　脚　　　踢关　　　　了　　门 [...]
    yòng　*jiǎo*　*tīguān*　*le*　*mén*
    use　foot　kick-close　ASP　door
'[...] [he] kicked the door close with his foot [...]'
(From 黑道江湖的恩怨情仇：决不饶恕 'The revenge for old scores of the wanderers along a dark path: absolutely no forgiveness' by Chao Ba: http://vip.book.sina.com.cn/book/chapter_40482_24900.html)

c. 好　一会儿，她　哭停　了。
hǎo yīhuìr　*tā*　*kūtíng*　*le*
quite a while　she　cry-stop　ASP
'After a while she finished to cry.'
(From the PKU corpus)

d. 刘　不　才　　　　等　　他们　笑停　　　了　说："现在　该　　我
liú　*bù*　*cái*　*děng*　*tāmen*　*xiàotíng*　*le*　*shuō*　*xiànzài gāi*　*wǒ*
Liu　not　just now　wait　they　laugh-stop　ASP　say　now　should I
说话　　　　　了　吧？"
shuōhuà　*le*　*ba*
speak　　ASP　PART
'Liu did not wait that they finished to laugh and said: "Is it my turn to talk now?"
(From 红顶商人胡雪岩 'The merchant in the red cap Hu Xueyan' by Gao Yang, chapter 7: http://cn.xs8.cn/gt/gaoyang/hdsr/08.htm)

The first thing to note is that examples like (60c) and (60d) are different from "normal" resultatives and are more likely to be considered as 'phase complements' (e.g. Chao 1968, Li & Thompson 1981), i.e. the V₂s of these verbs do not express a result state but rather express the phase of the action expressed by V₁ or the degree to which an action is carried out: "There are a few complements which express the phase of an action in the first verb rather than some result in the action or goal" (Chao 1968:446). Huang (2007) considers the V₂s occurring with this kind of resultatives as lexical markers signalling the completion of events. These compounds are termed 'phase' resultative compounds (e.g. Li & Thompson 1981), 'attainment' resultative compounds (cf. Packard 2000) or 'completive' resultative compounds (e.g. Smith 1997 [1990], Xiao & McEnery 2004, Chen J. 2008).

The set of V₂s which can occur in this kind of compounds is quite restricted and includes verbs like 完 *wán* 'finish', 好 *hǎo* 'be good', 到 *dào* 'arrive', 见 *jiàn* 'see, meet', e.g. 听见 *tīngjiàn* 'listen + perceive = hear', 学会 *xuéhuì* 'study + know = learn', 找到 *zhǎodào* 'look for + arrive = find', 洗完 *xǐwán* 'wash-finish = finish washing', 写好 *xiěhǎo* 'write-good = complete writing'. Therefore, we should set

apart examples in (60c) and (60d), since we think that are more likely to be included among phase complement compounds.

As far as the contrast between 开 *kāi* 'open' and 关 *guān* 'close' is concerned, the question remains as to why 开 *kāi* 'open' is normally found as V₂ in resultative compounds, while 关 *guān* 'close' is generally not allowed or, at best, is restricted. It should be noted that 开 *kāi* 'open' has acquired a broader use as V₂ of V-V compounds, with the following meanings: 表示人或事物随动作分开 'It represents persons or things that separate following an action'; 表示人或事物随动作离开 'It represents persons or things that leave/deviate from following an action' (Lü 1981). The extention of meaning could be a possible reason why 开 *kāi* 'open' is widely used as V₂ in resultative compounds.

Moreover, as we have seen, the transitive use of 开 *kāi* 'open' is apparently fading and the verb 打开 *dǎkāi* 'open' (cf. 4.5.1.2) is generally preferred (and is also less ambiguous than 开 *kāi*, which has many different meanings, e.g. 'open', 'bloom', 'drive', start'). In contrast, 关 *guān* 'close' is used transitively without restrictions. This point would need further investigation.

To sum up, while V₁s occurring in resultative compounds are not subject to particular restrictions, V₂s are generally limited to deadjectival and other unaccusative verbs, mainly externally caused, plus some stative verbs, like 懂 *dǒng* 'understand' or 会 *huì* 'know', and verbs like 哭 *kū* 'cry' and 笑 *xiào* 'laugh', which are unergative verbs but, nevertheless, as we have seen, can be also conceived as being externally caused. This constraint on V₂s does not come as a surprise, since resultative compounds are a causativizing strategy, where both the action and the result state are expressed. A resultative compound, thus, represents a causal event where the cause subevent is expressed by V₁ and the result subevent by V₂.

5.3.3.4 More on the differences between English APs and Chinese V₂s

We have seen that Mandarin Chinese allows unaccusative, non-deadjectival, verbs to act as V₂s in resultative constructions (see table 1), as well as some stative and unergative verbs. This contrasts with the English resultative construction, which requires an AP (or a PP) as the resultative phrase. It could be proposed that this kind of V₂s actually are past participle adjectives. Chen J. (2008) points out that Mandarin

Chinese does not have morphological marking for past participles, and that the Mandarin counterparts of English past participle adjectives are the most common V_2s in resultative compounds. However, this would not solve the problem, since we have seen (cf. 5.2.5) that English does not allow present or past participle adjectives, like *broken*, as resultative complements. Moreover, those adjective-like items, which are frequent as V_2s of resultative compounds (e.g. 干 *gān* 'dry'), can be considered as particular items possessing both adjectival and verbal features (remember that, for the sake of simplicity, we decided to keep referring to them as "deadjectival verbs"; see the discussion in 4.3.2 and 4.3.4). Therefore, another solution would be to asume that the resultative complements of Chinese resultative compounds are expressed by verbs (a point commonly agreed upon in the literature). This is why we have preferred to use the term them V-V compounds rather than V-A compounds. The V_2s of these compounds should be intransitive inchoative verbs which represent an externally caused change of state (with the exceptions we have discussed in the previous section).

Furthermore, as we have seen (cf. 5.2.5), Wechsler (2005) points out that English does not allow certain adjectives, as e.g. *wet, dirty, tired, hoarse*, to occur as APs in resultative control constructions, i.e. resultative constructions based on transitive verbs with a subcategorized object[27]. In contrast, Mandarin Chinese allows adjectives (or deadjectival verbs) like 湿 *shī* 'wet', 脏 *zāng* 'dirty', 累 *lèi* 'tired' to appear as V_2s, irrespectively of the kind of resultative compound involved, as in (61).

(61) a. 母亲　　　洗湿　　　了　条　　手巾 [...]
　　　　 mǔqīn 　　*xǐshī* 　　*le* 　 *tiáo* 　*shǒujīn*
　　　　 mother 　　wash-wet 　ASP 　CL 　　towel
　　　　 'Mother washed the towel wet [...]'
　　　　 (From the PKU corpus)
　　 b. 白色 衣服　在 洗衣机　　　　里 洗脏　　了 怎么办？
　　　　 báisè *yīfu* 　*zài xǐyījī* 　　　*lǐ xǐzāng* 　*le zěnmebàn*
　　　　 white clothes at washing machine in wash-dirty ASP what to do now
　　　　 'The white clothes were washed dirty in the washing machine, what to do now?'
　　　　 (Google search, September 2009)

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[27] Some of them are acceptable in ECM resultatives, e.g. *we danced ourselves tired* or *she sang herself hoarse*, since they lack the aspectual requirements following from the event-argument homomorphism (cf. 5.2.5).

c. 我　把　　衬衣　洗脏　　　　了。
  wǒ bǎ   chènyī xǐzāng   le
  I   BA   shirt wash-dirty ASP
  'I washed the shirt dirty.'
  'I washed the shirt dirty (e.g. in a river), but it came out dirtier than before.'
  (From Talmy 2000:276)
d. 我　骑累　　　了　那　匹　马。
  wǒ qílèi   le   nà   pǐ   mǎ.
  I   ride-tired ASP that CL   horse
  'I rode that horse tired.'

The examples in (61b) and (61c) show that in Mandarin Chinese there is the possibility to combine verbs that specify different, and even conflicting, semantic relations between the causal subevent and the result subevent (cf. Chen J. 2008). For example, Chen J. (2008) points out that the verb 洗 *xǐ* 'wash' can appear in a "conventional" resultative, 洗干净 *xǐgānjìng* 'wash-clean', where the clothes, or whatever is washed, are clean as a result of the washing event, but nevertheless can also appear with other kinds of result states, e.g. 洗脏 *xǐzāng* 'wash-dirty' (as in 61c), 洗破 *xǐpò* 'wash-torn'or 洗皱 *xǐzhòu* 'wash-wrinkled' (62) if the clothes turn out dirty, torn or wrinkled after washing.

(62)　a. 我　时常　　笨手笨脚地　　　摔坏　　　　碗　洗破　衣 [...]
       wǒ shícháng bènshǒubènjiǎo-de shuāihuài   wǎn xǐpò   yī
       I   often   clumsy-ADV   fall down-break bowl wash-torn clothes
       'I often clumsily break bowls, wash the clothes torn [...]'
       (From the novel 锦貌绣颜 by Shui Lingjing:
       http://novel.hongxiu.com/a/76675/1949398.shtml)
     b. 他　洗皱　　　了　这　些　衣服
       tā xǐzhòu   le   zhè   xiē   yīfu
       she wash-wrinkled ASP   this some clothes
       'She washed these clothes wrinkled'
       (Adapted from Yin 2007:78)

Therefore, the event of washing, which implies the result state 'becoming clean', can combine with its implied result ('clean'), with a conflicting result ('dirty') or even with a result which has anything to do with it ('torn'). This is not possible in English.

Let us now consider this difference in behaviour between English and Mandarin Chinese for resultatives with verbs meaning 'wipe' as V_1. Washio (1997:12) stresses that the verb *wipe* in English has at least three different, but related, senses:

- surface contact through motion ('rub'): *Beth wiped the table* (NOAD 2005)
- remove by means of surface contact through motion:
  - "remove (dirt or moisture) from something by rubbing its surface with a cloth, a piece of paper, or one's hand: *she wiped away a tear*" (NOAD 2005)
  - "clean (something) by rubbing its surface with a cloth, a piece of paper, or one's hand: *the man wiped his hands on his hips*" (NOAD 2005)
- put by means of surface contact through motion:
  - "spread (a liquid) over a surface by rubbing: *gently wipe the lotion over the eyelids*" (NOAD 2005)

According to Washio (1997:13), in a sentence like *she wiped the table clean/dry*, *wipe* must be a verb of surface contact through motion, since it is in the location-as-object construction. He observes that in the real world, if you wipe a table with a dirty or wet cloth, the wiping activity can make the table dirty or wet. Nevertheless, resultative constructions such as **he wiped the table dirty/wet* are not allowed. As we have seen, Wechsler (2005) explains this restrictions with the nature of the adjective: some kind of adjectives would not be allowed to act as resultative phrases due to the nature of their scale. However, we have pointed out that this explanation seems to be weak.

Washio (1997:13) observes that, given that the verb and the adjective are completely independent of each other and that the causal relation is determined compositionally, there would be no reason why *dirty* and *wet* cannot appear as resultative phrases, especially since paraphrases like *he caused the table to become dirty/wet by wiping it* are perfect. Washio points out that adjectives like *clean* or *dry* describe the states which hold after dirt, liquid or other substances are removed from an object, e.g. a table. In contrast, adjectives like *dirty* or *wet* describe the states which hold if dirt, liquid or other substances are put on an object. Therefore, Washio suggests that the fact that adjectives like *dirty* or *wet* cannot appear in resultative constructions containing *wipe* may be due to the fact that *wipe*, even in its basic sense, describes an activity which has the specific purpose of cleaning something, as its dictionaries entries seem to suggest (63):

(63) a. **wipe**
      verb [trans.]
      clean or dry (something) by rubbing its surface with a cloth, a piece of paper, or one's hand : *Paul wiped his face with a* handkerchief; *he wiped down the kitchen wall.* (NOAD 2005)

b. **wipe**
If you wipe something, you rub its surface to remove dirt or liquid from it:
I'll just wiped the table..When he had finished washing he began to wipe the basin clean..Lainey wiped her hands on the table. (CCEDAL 2001)

Therefore, Washio (1997) observes that, if dirt or liquid is removed from the table, then the table becomes clean or dry. In contrast, the table can become dirty or wet just if dirt or liquid is put onto it. Therefore, although *wipe* is not in itself a verb of removal (L&RH 1991), it has a "disposition toward removal" (Washio 1997:14), i.e. it describes an activity which affects an object in such a way that, if a change of state of the object has been caused, it changes in a fixed direction to reach the final state, which is a state in which the object is free of liquid, dirt or other substances (cf. also Green, 1972, McNulty 1988, Napoli 1992).

Let us now consider the verb 'wipe' in Mandarin Chinese, i.e. 擦 *cā*; this verb can appear either in resultative compounds where V_2 describes a state of being clean, i.e. 干净 *gānjìng* 'clean', or dry, i.e. 干 *gān* 'dry' (64), just like in English, or in resultative compounds where V_2 describes a state of being dirty, i.e. 脏 *zāng* 'dirty', or wet, i.e. 湿 *shī* 'wet' (65).

(64) a. 他　擦干　　　了　　泪水
　　　　tā　cāgān　　le　　lèishuǐ
　　　　he　wipe-dry　ASP　　tear
　　　　'He wiped the tears dry'
　　　　(From the PKU corpus)
　　　b. 我　擦干　　　了　　手
　　　　wǒ　cāgān　　le　　shǒu
　　　　I　　wipe-dry　ASP　　hand
　　　　'I wiped my hands dry'
　　　　(From the PKU corpus)
　　　c. 我　擦干净　　　了　　黑板
　　　　wǒ　cāgānjìng　le　　hēibǎn
　　　　I　　wipe-clean　ASP　　blackboard
　　　　'I wiped the blackboard clean'
　　　d. 毛米　　用　手　擦干净　了　脸上　　　的　雨水　　和　泪水
　　　　Máo Mǐ　yòng shǒu cāgānjìng　le　liǎnshàng　de　yǔshuǐ　hé　lèishuǐ
　　　　Mao Mi　use　hand wipe-clean ASP on one's face DE rainwater and tear
　　　　'Mao Mi wiped the rainwater and the tears on her face clean with her hand'
　　　　(From 曼哈顿西区 'The western area of Manatthan', 26)
　　　　http://www.huarenhome.com/index.php/action-viewnews-itemid-35214)

(65) a. 孙毓妍　用　手　擦拭　　写　在　桌子　上　的　钢笔　字，
　　　Sūn Yùyán yòng shǒu cāshì　xiě　zài zhuōzi shàng de gāngbǐ zì
　　　Sun Yuyan use　hand wipe-away write at　table　on　DE pen　character
　　　虽然　　字　　是　　擦干净　了，但　她　的　手　却　　很
　　　suīrán　zì　　shì　cāgānjìng le　dàn tā　de　shǒu què　hěn
　　　although character be　　wipe-clean ASP but　she DE　hand but　very
　　　脏　了。孙毓妍　就　　在　手　在　王剑　　的　桌子　　上
　　　zāng le　Sūn Yùyán jiù　zài　shǒu zài Wáng Jiàn de　zhuōzi　　shàng
　　　dirty ASP Sun Yuyan then　at　hand　at　Wang Jian DE　table　　on
　　　擦，把　他　的　　桌子　擦脏　　　了。
　　　cā　bǎ　tā　de　　zhuōzi cāzāng　　le
　　　wipe BA　he　DE　　table　wipe-dirty　ASP
　　　'Sun Yuyan wiped the characters written with pen away with her hand. Although the characters were wiped clean, her hand was dirty. Sun Yuyuan, then, rubbed on her hand and on Wang Jian's table, she wiped his table dirty.'
　　　(From 王剑原谅了孙毓妍 'Wang Jian pardoned Sun Yanyan', article by Lu Huili:
　　　http://www.srxx.net/xstd/ShowArticle.asp?ArticleID=1581)
　　b. 刚　　上课　　　就　在　黑板　　上　　用　湿布　　擦湿
　　　gāng shàngkè　　jiù　zài　hēibǎn　shàng yòng shībù　cāshī
　　　just attend a class then at　blackboard on　　use　wet cloth wipe-wet
　　　了　一　　块　　地方
　　　le　yī　kuài　dìfang
　　　ASP one　CL　　part
　　　'At the beginning of the lesson, [the teacher] with a wet cloth wiped a part of the blackboard wet.'
　　　(From 激发学生学习科学的兴趣 'To stimulate the students interest in studying science':
　　　www.fhchcz.com/upload/2009-03/09032009528964.doc)

In the examples in (64), 擦 *cā* 'wipe' has the meaning of removing by means of surface contact through motion that we have seen above for English, both in the sense of removing substances from something by rubbing its surface with a cloth (or the like) and in the sense of cleaning something by rubbing its surface with a cloth, etc. In contrast, in the examples in (65), where 擦 *cā* 'wipe' forms a resultative compound with 脏 *zāng* 'dirty' or 湿 *shī* 'wet', it seems to have a contact through motion sense and to be equivalent to *rub* rather than to *wipe*. In fact, the verb 擦 *cā* in Chinese has, at least, three senses, as can be seen from its lexical entry in XHGC (2004), presented in (66) (*pinyin* and translations added):

(66) a. 摩擦 *mócā* 'rub'
　　　膝盖擦伤了 *xīgài cāshāng le* 'knees was scratched (rub-hurt)'

擦火柴 *cā huǒchái* 'strike a match'
擦地板 *cā dìbǎn* 'scrub the floor' (cf. 文林 *Wenlin* dictionary)
b. 用手、布等揩拭 *yòng shǒu, bù děng kāi shì* 'clean using hands, cloth, etc.'
擦眼泪 *cā yǎnlèi* 'wipe the tears'
擦皮鞋 *cā píxié* 'wipe the leather shoes'
擦桌子 *cā zhuōzi* 'wipe the table'
c. 涂抹 *túmǒ* 'smear'
擦粉 *cā fěn* 'powder one's face / apply powder (whipe the powder)'
擦药膏 *cā yàogāo* 'apply ointment ('wipe the ointment')'

Therefore, besides being the equivalent of English *wipe*, in Chinese 擦 *cā* is also used as a true contact through motion verb, which can be considered equivalent to the verb *rub*. The resultative compounds in (65), 擦脏 *cāzāng* 'wipe-dirty' and 擦湿 *cāshī* 'wipe-wet', thus, should be rather glossed as 'rub-dirty' and 'rub-wet'[28]. These compounds are perfectly in accordance with world knowledge, where something can become dirty or wet by rubbing it with dirty or wet clothes, for example. This difference between English *wipe* and Chinese 擦 *cā* 'wipe, rub' could help explain why Chinese allows resultatives formed with verbs implying a resultant state as 'wet' or 'dirty', while English does not. However, this does not explain why English generally does not allow adjectives like *dry* and *wet* to appear as resultative APs, irrespectively of the verb used in the construction (cf. Wechsler 2005). Moreover, this cannot help to explain why Chinese allow a verb like 洗 *xǐ* 'wash' to appear with results that conflict or have nothing to do with its meaning (cf. exx. 61 and 62).

A further difference between English and Chinese related to the use of the verbs just considered above, i.e. *wipe* and *rub*, does emerge. L&RH (1995:65-68) point out some examples, observed by Hoekstra (1988), which apparently go against their prediction that the postverbal NP following a transitive verb needs to correspond to the regular direct object of the verb (cf. 5.2.6). See the examples in (67), from L&RH (1995:65):

(67) a. *He washed the soap out of his eyes.* (Hoekstra 1988:116)
b. *He rubbed the tiredness out of his eyes.* (Hoekstra 1988:116)
c. *The weaver rinsed the dye out of the material.*

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[28] However, note that in English *rub* has a sense in which it entails a particular result: "make dry, clean, or smooth with pressure from a hand, cloth, or other object: *she found a towel and began rubbing her hair* | [trans.] *she rubbed herself as dry as possible*" (NOAD 2005).

L&RH (1995) suggest that these problematic examples, which they call the *wash* sentences, are not instances of the resultative construction, but rather involve an alternate projection of the arguments of some verbs into the syntax due to the fact that, according to them, verbs from certain semantic classes (mainly, but not exclusively, verbs of contact through motion like *wipe* and *rub*) can also be verbs of removal (see the discussion above). In support of their claim, L&RH (1995) point out, first of all, that all the *wash* sentences involve a verb-of-removal interpretation. They further point out that in all the relevant examples the presumed resultative phrase is a PP describing the location that something is removed from and never an AP, e.g. *I washed the soap slippery*, *I filed my pants edgy* (L&RH 1995:66). Moreover, the object of the preposition, in each instance, is an NP that would otherwise be a regular direct object of the verb, e.g. *he washed his eyes* in the case of (67a). L&RH (1995) highlight that these constructions are in contrast with resultatives based on unergative or unspecified object verbs, where the resultative phrase can be either an AP or a PP and, in the case of a PP result phrase, the object of the preposition does not have to correspond to something that can be considered an argument of the verb. They suggest that it is likely that the *wash* sentences must include a PP because it is the only way to let the original object of the verb to appear in the construction. If this object is not present, as in *she washed the soap out*, then it is implied. In fact, L&RH (1995) further stress the fact that these verbs cannot be found in resultative constructions that do not meet these properties. See the example in (68), from L&RH (1995:67).

(68)   *Phil rubbed the cloth dirty* (in the interpretation where Phil causes the cloth to become dirty by rubbing things with it).

Therefore, L&RH (1995) conclude that the verbs in the *wash* sentences have undergone a meaning shift, becoming verbs of removal, and thus project their arguments differently.

However, in Chinese, sentences analogous to the one described in (68) apparently do exist. See the examples in (69):

(69)   a. [...] 一手   用   抹布   轻轻   将   叶片   上   的
              yīshǒu   *yòng* *mǒbù* *qīngqīng* *jiāng* *yèpiàn* *shàng* *de*
              one hand   use   cloth gently OBJ   leaf   on   DE

尘土 擦去。[我] 擦脏 了 抹布 洗脏 了 水 [...]
chéntǔ cāqù wǒ cāzāng le mǒbù xǐzāng le shuǐ
dust rub-go I rub-dirty ASP cloth wash-dirty ASP water
'[...] With one hand I wiped the dust on the leaves. [I] rubbed the cloth dirty, washed the water dirty [...]'
(From 洗茶花叶 'Washing tea leaves', in 陕西交通报 *Shanxi jiaotong bao* 'Journal of Shanxi', July 16, 2004: http://newspaper.sxhighway.gov.cn/document/20040723165103033.htm)

b. 站 起身 来 时 不 小心 把 汤 泼 到
zhàn qǐshēn lái shí bù xiǎoxīn bǎ tāng pō dào
stand stand up come when not be careful BA soup splash towards
同桌 的 书包 上，老师 要 我 用 我 的 校服
tóngzhuō de shūbāo shàng lǎoshī yào wǒ yòng wǒ de xiàofú
seat-mate DE schoolbag on teacher want I use I DE school dress
擦，我 不肯 擦，老师 就 打 了 我 一巴掌 [...]
cā wǒ bùkěn cā lǎoshī jiù dǎ le wǒ yībāzhǎng
wipe I disapprove wipe teacher then hit ASP I a slap
"老师 打 了 我，我 就 用 校服 擦，把 我 的
lǎoshī dǎ le wǒ wǒ jiù yòng xiàofú cā, bǎ wǒ de
teacher hit ASP I I then use school dress wipe BA I DE
校服 都 擦脏 了[...]"
xiàofú dōu cāzāng le
school dress all wipe-dirty ASP
'When I stood up, [I] accidentally splashed the soup on my seat-mate's schoolbag. The teacher wanted me to wipe it with my school dress. I did not want to do that, so the teacher slapped me [...] "The teacher slapped me, so I wiped the schoolbag with my school dress, I rubbed my school dress dirty [...]"'
(Google search, September 2009)

c. [...] 用 一 块 湿布 去 擦，布 擦脏 了，就 换
yòng yī kuài shībù qù cā bù cāzāng le jiù huàn
use one CL wet-cloth go rub cloth wipe-dirty ASP then change
一 片 干净 布面 擦，直到 擦干净 为 止。
yī piàn gānjìng bùmiàn cā zhídào cāgānjìng wéizhǐ
one CL clean cloth rub up to wipe-clean up to
'[...] rub [it] with a wet cloth. When the cloth is wiped dirty, use another clean cloth to rub, until [it] is wiped clean.'
(Gooogle search, September 2009)

Moreover, consider the sentence in (70):

(70) a. 小王 洗湿 了 鞋
Xiǎo Wáng xǐshī le xié
Xiao Wang wash-wet ASP shoe
'Xiao Wang washed the shoes wet'
(From Xiong & Liu 2006:121; *pinyin* and translation added)

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b. 他　洗　　手　　　洗脏　　　　了　　水
   tā　xǐ　　shǒu　　xǐzāng　　le　　shuǐ
   he　wash　hand　wash-dirty　ASP　water
   'He washed the water dirty by washing his hands (He made the water dirty
   by washing his hands)'
   (From Yin 2007:78)

c. 她　洗　　衣服　　　　洗粗　　　了　　手
   tā　xǐ　　yīfu　　　xǐcū　　le　　shǒu
   she　wash　clothes　　wash-coarse　ASP　hand
   'She washed her hands coarse by washing clothes (She made her hands
   coarse by washing clothes)'
   (From Yin 2007:78)

Xiong & Liu (2006) point out that usually the sentence in (70a) means that, as a result of a washing event, in which Xiao Wang washes something, his shoes got wet. In other words, it is not the case that Xiao Wang washes the shoes and as a result they get wet, but rather Xiao Wang washes something (for example his car) and during the washing his shoes got wet. Therefore, 鞋 *xié* 'shoes' is not the direct object of V1 (even though, in principle, it could be). The same can be said for the other examples in (70), where the fact that the object of the resultative compound is not the object of V₁ is made explicit by the presence of an adjunct clause.

The examples above, together with other examples seen throughout the chapter, show that, at least for Chinese, L&RH's (1995) assumption that in a resultative construction the postverbal NP following a transitive verb needs to correspond to the regular direct object of the verb seems not to hold; this apparently goes in the direction of Hoekstra's (1988) small clause approach, i.e. the postverbal NP is not the direct object of the verb, but the subject of a small clause.

What seems to clearly emerge from the above discussion is that Chinese resultative compounds are by far subject to fewer restrictions than English resultative constructions. In particular, Chen J. (2008) suggests that the possibility of combining verbs that specify different, even conflicting, semantic relations between the causal subevent and the caused result subevent is a further sign of the productivity of verb compounding in Chinese. Chen J. (2008) follows Talmy (2000) in illustrating these semantic relations. According to Talmy (2000), both English and Chinese are satellite-framed languages[29]. Such languages use satellites to specify Path, aspect

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[29] Talmy (2000:22) defines a 'satellite to the verb' as "the grammatical category of any constituent other than a nominal or prepositional-phrase complement that is in a sister relation to the verb root". It can be either a bound affix or a free word, e.g. English verb particles, Russian verb prefixes, and

change, action correlation and realization, which, according to Talmy (2000) are the five framing (main) event types. Mandarin Chinese uses its satellites especially to specify realization.

According to Talmy (2000:262-263), in satellite-framed languages an event which implies realization can be expressed in four different ways, depending on the kind of verb involved, as shown in (71):

(71) a. **Intrinsic-fulfillment verb: action**
The agent executes a simple action, the satellite adds extra semantic information denoting the change of state after the execution of the action.
Example:
Verb: *kick* 'propel foot into impact with'
Satellite: *flat* 'thereby causing to become fat'
I kicked the hubcap vs. *I kicked the hubcap flat.*

   b. **Moot fulfillment verb: action + goal**
Agent intends and executes a particular action: whether the action is fulfilled or not depends on the satellite, which makes the change of state. actual (satellite = fulfillment of the goal)
Example:
Verb: *hunt* 'go about looking with the goal of thereby finding and capturing'
Satellite: *down* 'with fulfillment of the goal'
The police hunted the fugitive for/*in three days (*but they did not catch him*) vs. *The police hunted down the fugitive in/*for three days* (***but they did not catch him**)

   c. **Implied-fulfillment verb: action + goal + implication of fulfillement of the goal**
An agent not only intends and executes a particular action, but also this action leads to a certain desired result. The satellite functions as confirmation of that implicature.
Example:
Verb: *wash* 'immerse and agitate with the goal of cleansing thereby + the implicature of attaining that goal'
Satellite: *clean* 'with confirmation of attaining the goal of cleansing'
I washed the shirt (*but it came out dirty*) vs. *I washed the shirt clean* (**but it came out dirty*)

Chinese verb complements. According to Talmy (2000:222), languages that characteristically map the core schema (the schematic core of the framing event, i.e. main event, cf. Talmy 2000:218) into the verb would have a framing verb and are defined as verb-framed languages (e.g. Romance languages and Japanese). In contrast, languages that map the core schema onto the satellite would have a framing satellite and are defined as satellite-framed languages (e.g. English and Chinese). Languages with a framing satellite map the co-event into the main verb (co-event verb). For example, in the English sentence *the bottle floated out*, the satellite *out* expresses the core schema (in this case the path), while the main verb is a co-event, which expresses manner. In contrast, languages with a framing verb map the co-event either onto a satellite or onto an adjunct (e.g. adpositional phrase or gerundive-type constituent). For example, in the Spanish *la botella salió flotando* 'the bottle exited floating', the verb *salir* 'exit' expresses the core schema (path), while the gerundive *flotando* 'floating' expresses the co-event of manner (cf. Talmy 2000:223).

d. **Attained-fulfillment verb: action + goal + fulfillement of the goal**
Pleonastic satellite (generally avoided in English)
Example:
Verb: *drown* 'submerge with the goal of killing thereby + attainment of a goal'
Satellite: *dead/to death* 'with the attainment of the goal of killing'
I drowned him (*but he wasn't dead*) vs. *I drowned him dead/to death.*

With the first kind of verbs, i.e. intrinsic-fulfillment verbs (71a), the addition of a satellite adds a semantic increment that is extrinsic to the referential content of the verb: the meaning of the satellite is added to the meaning of the verb, which is understood to cause the named change of state. This kind of satellite is called 'further-event' satellite.

With moot-fulfillment verbs (71b), the addition of a satellite indicates fulfillment of the intention to bring about a particular goal and achievement of that goal: the meaning of the satellite is not independent of the meaning of the verb. This kind of satellite is termed 'fulfillment' satellite.

With implied-fulfillment verbs (71c), the addition of a satellite confirms what is only implied by the verb, thus the satellite is termed 'confirmation' satellite. According to Talmy (2000), English is not rich in verbs of the implied-fulfillment type.

Lastly, attained-fulfillment verbs (71d) cannot add a satellite complementing the verb's internal semantic structure, since all the conceptual elements referred by the verb are realized. Moreover, English tends not to add pleonastic satellites to this kind of verbs, which are semantically complex verbs, consisting of two distinct subevents: the first subevent is earlier than the second one and is meant to cause the latter. Talmy (2000) observes that it is not always easy to distinguish attained-fulfillment verbs from intrinsic fulfillment verbs. He suggests that it is possible that these two kinds of verbs comprise only a single referential type on which either of two conceptual structures with different granularities can be imposed. For example, the verb *kick*, an intrinsic-fulfillmnet verb, could be construed as an attained-fullfilment verb as well: "An Agent intentionally executes the action of thrusting her foot forth; she further intends that this action leads to an impact of the foot with a specific object; and this impact takes place" (Talmy 2000:268). In the same way, an attained-fullfillment verb, like *drown*, can also be construed, under a more coarse grained conceptualization, as a unitary Gestalt action and can be regarded as an intrinsic-fulfillment verb. Talmy

(2000) introduces the term 'fulfilled' verbs to refer to both types of verbs (i.e. attained-fulfillment and intrinsic fulfillment verbs): these verbs have in common the fact that their scope of the intention matches their extent of fulfillment; they differ only as to the construal of their granularity.

Moreover, Talmy (2000) puts together the moot-fulfillment and the implied-fulfillment types under the name of 'conative' verbs: they differ as to their implicature of fulfillment, but share the fact that their scope of intention overshoots their extent of fulfillment.

According to Talmy (2000:272), Mandarin agentive verbs are mainly of the moot-fulfillment type (the verb does not entail any assertion as to the change of state) or of the implied-fullfillment type (the verbs implies but does not entail a particular change of state), as in the example (72) and (73)[30] respectively.

(72) a. 我　追　了　他　　(但是　没　追到)
       wǒ　zhuī　le　tā　　dànshì　méi　zhuīdào
       I　chase　ASP　he　　but　not　catch
       'I chased him (but I did not catch him)'

     b. 我　追到　了　他
       wǒ　zhuīdào　le　tā
       I　chase-up　ASP　he
       'I catched him'

(73) a. 我　杀　了　他　　(但是　没　杀死)
       wǒ　shā　le　tā　　dànshì　méi　shāsǐ
       I　kill　ASP　he　　but　not　kill-die
       'I killed him (but he did not die)'

     b. 我　杀死　了　他
       wǒ　shāsǐ　le　tā
       I　kill-die　ASP　he
       'I killed him'

According to Talmy (2000), the English verb used in the gloss in (73) does not correspond in meaning to the Chinese one and thus is misleading[31]. Talmy suggests that the difference is due to the fact that the English verb is generally construed to refer to a simplex action of the intrinsic-fullfillment type, "[i]n particular, it is generally construed to specify the attainment of a particular final state, and neutral as

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[30] The examples in (73) suggest that Chinese generally do not have attained-fullfillment verbs.

[31] The same can be said for verbs like *open* and *kick* (cf. Ch. 开 *kāi* 'open', 踢 *tī* 'kick'). On the verb 开 *kāi* 'open', see 4.4 and 4.5.1.2.

to the particular action that leads to that state." (p.273). The Mandarin counterpart, in contrast, is divided into two parts, as in the implied-fulfillment pattern: the verb indicates an action performed with the intention to attain a final outcome, which is confirmed by the satellite.

Moreover, the semantics of the Mandarin verb-satellite system is wider than the English one and this is what makes possible for Mandarin, and not for English, to combine verbs that specify different, even conflicting, semantic relations between the causal subevent and the caused result subevent, as we have seen above (cf. Chen J. 2008). In fact, according to Talmy (2000), Mandarin conative verbs can occur not only with satellites that express fulfillment or confirmation, as seen above, but also with satellites that express 'underfulfillment', 'over-fulfillment', 'antifulfillment' and 'other-event'.

Consider, for example, a verb like 弯 *wān* 'bend'. This verbs means 'to curve', 'to shape or force (something straight) into a curve or angle'; it can appear in a resultative compound with 弯 *wān* 'bend/bent' as V2 (74) (cf. also Chen J. 2008:30). In this case V1 implies an intended result state of becoming bent, while V2 confirms this implicature: in Talmy's terms, V2 is a fulfillment satellite.

(74) 我   把   棍子   弯弯   了。
      wǒ   bǎ   gùnzi wānwān   le
      I   BA   stick bend-bent ASP
      'I bent the stick bent.'
      (Adapted from Talmy 2000:275)

However, the verb 弯 *wān* 'bend' can also occur with V2s such as 折 *shé* 'break' or 直 'straight', as in (75).

(75) a. 我   弯折   了   竹   皮
         wǒ wānzhé   le   zhú   pí
         I   bend-break ASP   bamboo skin
         'I bent the bamboo bark broken (I pressed in on the bamboo bark to bend it but wound up breaking it)'
         (Adapted from Talmy 2000:276)
      b. 我 把   棍子   弯直   了
         wǒ bǎ   gùnzi wānzhí   le
         I   BA   stick bend-straight ASP
         'I bent the stick straight'
         (From Chen J. 2008:30)

The sentences in (75) describe events in which the stick ends up broken (it is bent so much that it broke) or straight (maybe due to the flexibility of the stick) rather than bent (cf. Chen J. 2008). In the first case (75a), V2 represents an over-fulfillment satellite, since it goes over the scope intended by the action expressed by V1. In fact, the intention of the act of bending is to get the bamboo bark into a bent shape; however, if you unintentionally break the bamboo bark, maybe because you exert too much force or because it is too brittle, you go over your intention: the concept of breaking is conceived as in a continuum with that of bending and as lying beyond it. Therefore, if the satellite marks this excess it is defined as an over-fulfillment satellite (cf. Talmy 2000:276).

In contrast, in (75b) V2 expresses a result which conflicts with the one implied by the verb, going in the opposite direction: the stick is straight, and not bent, as a result of a bending action. This kind of semantic effect is called anti-fullfillment by Talmy (2000), and it is the same result produced in sentences like those in (61b) and (61c), which present a resultative compound 洗脏 *xǐzāng* 'wash-dirty', where the result, i.e. 脏 *zāng* 'dirty', is opposite to the one implied by 洗 *xǐ* 'wash'.

Moreover, in resultative compounds V2 can also express an insufficient fulfillment of the full scope of the intention, as in (76). This kind of satellite is termed by Talmy (2000:276) under-fulfillment satellite.

(76) 我   把   棍子   折弯   了。
      wǒ   *bǎ*   *gùnzi* *zhéwān*   *le*
      I   BA   stick   break-bend   ASP
      'I broke the stick bent.'
      (Adapted from Talmy 2000:276)

Lastly, Mandarin resultative V2s can also express a result which has nothing to do with the one implied or intended by V1, as in the example in (77) (see also ex. 62).

(77) 我   洗破   了   衬衣。
      wǒ   *xǐpò*   *le*   *chènyī*
      I   wash-torn   ASP   shirt
      'I washed the shirt torn.'
      (Adapted from Talmy 2000:277)

The example in (77) presents an action of immersing and agitating or rubbing a shirt, with the intention of getting it clean; nevertheless, unintentionally, the shirt comes out torn. According to Talmy (2000:277), this kind of satellite can be considered a further-event satellite, and thus he terms it 'other-event' satellite.

In contrast, all these possibilities are ruled out in English: an implied-fulfillment verb in English, like *bend* or *wash*, as we have already seen, can only appear with a resultative complement that confirms the attainment of the goal, e.g. *I bent the stick into a curve*, *I washed the clothes clean*. According to Talmy (2000), implied-fullfillment verbs in English convey a lexicalized implicature, i.e. the attainment of the implied goal (cf. also Chen J. 2008). Therefore, a resultative phrase that contradicts the result implied by V_1 should be ruled out, e.g. ?*I bent the stick straight*[32]. In the same way, the other possible kinds of fulfillment available in Chinese are apparently ruled out in English.

What seems to emerge from the discussion in this section is that resultative compounds in Chinese are richer and are apparently subject to fewer constraints than English resultative constructions.

5.4 Concluding remarks

In this chapter we have introduced the issue of resultative compounds in Chinese, which can be considered as an alternative analytical strategy which arose after the loss of other means to express causativity in this language. Since Chinese resultative compounds share a number of characteristics with the English resultative construction, we have first introduced the main characteristics and constraints found for the English resultative construction, in order to be able to compare them with Chinese resultative compounds, showing the similarities and stressing the differences between these two kinds of constructions.

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[32] We have put a question mark on this sentence because a Google search reveals some occurrences of this resultative, e.g. *Drawknife this stick even and flat on all four sides, straight with the grain. If there is a slight twist to the grain, follow the twist while doing the drawknife work, and* **bend the stick straight** *afterwards*. Consider also the following sentence: [...] *but in trying to* **bend the stick straight** *he has bent it much too far the other way*. This sentence seems to suggest that the stick is curved and the action performed is intended to make it straight, bending it in the opposite direction of the curve. Therefore, the action would not be intended to curve the stick, but rather to obtain exactly the opposite result.

We have illustrated the different types found among Chinese resultative compounds and we have seen that these compounds allow two patterns, in the same way as the English resultative construction does: NP$_1$ V$_1$-V$_2$ NP$_2$ (transitive) and NP$_1$ V$_1$-V$_2$ (intransitive). However, differently from English, Chinese normally allows the result to be predicated of the subject. This clearly contradicts the DOR (which have been questioned in English as well). As an alternative to the DOR, Huang (2006) proposes a modified version of the MDP (Minimal Distance Principle), which states that in a resultative construction, the result XP is predicated of the closest prominent argument.

Moreover, in Chinese resultatives with an unergative or transitive V$_1$ can causativize, while in English they cannot (e.g. *that bottle of wine drank everybody drunk*). Furthermore, the Animate Instigator Constraint (cf. Goldberg 1995) does not seem to hold for Chinese (cf. Chen J. 2008).

As far as the kind of verbal roots that can occur in a resultative compound is concerned, we have seen that, like in English, Chinese does not impose particular restrictions on the V$_1$: almost all kinds of verbs, with a few exceptions, can occur as the V$_1$ of a resultative compound (apparently, also some kinds of stative verbs can be used as V$_1$). In contrast, like in English, the possible verbs that can occur as V$_2$s are much more restricted; among possible V$_2$s we can find: externally caused verbs denoting change of state; some stative verbs denoting mental states, e.g. 懂 *dǒng* 'understand' or 会 *huì* 'know'; unergative verbs like 哭 *kū* 'cry' and 笑 *xiào* 'laugh', which can be interpreted as having no control over the action denoted by the predicate, and thus can be considered as being directly (externally) caused. The kind of APs allowed in the English resultative construction seems to be even more restricted: English allows as result APs mainly closed-scale adjectives and does not allow present and past participle adjectives, e.g. *broken*. Chinese allows V$_2$s based on some kind of adjectives that in English are generally not allowed, e.g. *dirty*, *wet* (cf. Wechsler 2005). Furthermore, we have pointed out that Chinese allows the occurrence of V$_2$s that contradict (or even have nothing to do with) the result implied by V$_1$, e.g. 洗脏 *xǐzāng* 'wash-dirty', 洗破 *xǐpò* 'wash-torn' or 洗皱 *xǐzhòu* 'wash-wrinkled' (cf. Talmy 2000, Chen J. 2008).

Another interesting difference between English and Chinese is that English does not allow AP resultatives formed with verbs of removal, like *wash* and *rub* (cf. L&RH 1995), as e.g. in **Phil rubbed the cloth dirty* (on the interpretation where Phil causes the cloth to become dirty by rubbing things with it, cf. ex. 68), while Chinese does, e.g. 他(洗手)洗脏了水 *tā (xǐ shǒu) xǐzāng le shuǐ* 'He washed the water dirty (by washing his hands with it), i.e. he made the water dirty (by washing his hands with it)' (cf. 70b).

In a nutshell, in this chapter we have illustrated the different types of Chinese resultative compounds, their characteristics and their behaviour, comparing them with the English resultative construction: Chinese resultative compounds seem to be subject to less restrictions and to show a wider variety of combinations than those found in the English resultative construction. On the basis of these data, in the next chapter, after reviewing some of the main analyses proposed for Chinese resultative compounds, we will propose an analysis based on Ramchand's (2008) approach.

6. A 'first-phase syntax' analysis of resultative compounds and some remarks on other causative compounds

6.1 Introduction

In the previous chapter we have introduced the issue of resultative compounds in Chinese, providing a description of their main characteristics. In this chapter, after a review of some of the main approaches to Chinese resultative compounds proposed in the literature, we will provide an analysis based on Ramchand's (2008) framework. We will first discuss Ramchand's (2008) analysis of the English resultative construction and we will then try to apply it to Chinese resultative compounds. Such analysis, based on a syntactic decomposition of the event structure, will also enable us to defend the position that resultative compounds are left-headed due to structural reasons. The question of headedness in Chinese resultative compounds has raised a great debate in the literature and there is no general agreement on which constituent is the head of these compounds; all the logical possibilities have been proposed: left-headedness, right-headedness, double-headedness, exocentricity. We will show that, assuming a structural notion of headedness, the left-hand constituent clearly is the head of the resultative compounds, i.e. Chinese resultative compounds are left-headed.

Lastly, we will present another kind of causative compounds, which, to the best of our knowledge, did not have received much attention in the literature. According to us, these compounds express indirect causation and allow the caused event to have different degrees of autonomy, depending on the kind of V_1 involved.

6.2 An overview of the approaches to Chinese resultative compounds

As we have mentioned in the previous chapter, many different kinds of analyses for Chinese resultative compounds have been proposed in the literature: lexical, syntactic, constructionist (cf. Li Y. 1990, 1995, Huang C.T.J. 1992, 2006, Zou 1994, Cheng & Huang 1994, Cheng 1997, Sybesma 1999, Her 2004, 2006, Huang H.C. 2006, among

others). In the next sections, we will try to offer an overview of some of the main positions proposed.

6.2.1 Li (1990)

Li (1990) is the first to provide a systematic account of resultative compounds on the basis of the argument structure of the two verbal constituents. This author attempts to demonstrate that the restrictions on theta assignment in resultative compounds depend on standard Case theory plus three other assumption of Government Binding Theory: theta identification (Higginbotham 1985), structured theta-grid (Grimshaw 1990) and head-feature percolation. These requirements imply that: 1) theta-roles of two different verbs can be identified and assigned to the same NP; 2) theta-roles of a verb must be ordered according to their relative prominence; 3) the prominence of theta-roles in the argument structure of a compound has to be the same of that of its head. Li (1990) argues that the argument structure of Chinese resultative compounds is determined compositionally from that of each constituent. The two constituents of a resultative compound interact in order to give well formed compounds and excluding the impossible combinations. Moreover, Li (1990) assumes that there is a causal relation between the two constituents of a resultative compound, where the activity of the first verb causes the result state denoted by the second verb, as exemplified in (1):

(1)   a. 跑累 *păolèi* 'run tired'

b..   V <1-1^1>
          /\
        V$_1$ V$_2$
         | |
        跑   累
        păo   *lèi*
        run   tired
        <1>   <1^1>
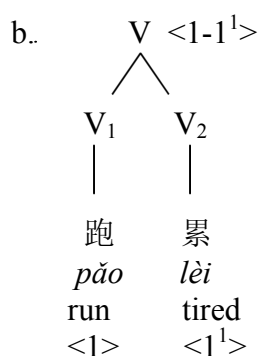
c. 跑累 (x) ⇔   跑 (x) CAUSE 累 (x)
   păolèi   *păo*   *lèi*
   run-tired   run   tired

d. 我   跑累   了。
   wǒ păolèi le
   I   run-tired ASP
   'I run myself tired (I got tired because of running).'

The example given above shows a resultative verb composed of two intransitive verbs: 跑 *pǎo* 'run', whose theta-grid is <1>, and 累 *lèi* 'tired', whose theta-grid is <1^1>. The whole compound has only one theta role, thus Li (1990), in order to avoid Theta Criterion violation, proposes that the two theta roles are identified; arguments are identified and assigned to the whole compound. The compound will have to coindex theta-roles <1-1^1> after theta identification. Since the two theta roles are assigned to the same argument, the subject NP in (1d) is sufficient to satisfy them and there is no Theta Criterion violation.

Since there are only two structural cases available by assumption, a compound can take only two arguments. Therefore, a compound consisting of verbs with two theta roles, e.g. 学会 *xuéhuì* 'learn' (学 *xué* 'study' <1, 2>; 会 *huì* 'know' <1^1, 2^1>), cannot take more than two arguments, even though they are available. Moreover, since the theta-role prominence must be respected, compounds in which the two verbs have the theta grid <1, 2> and <1^1, 2^1>, respectively, can only be identified as <1-1^1, 2-2^1> ; other combinations are ruled out.

Through theta-identification and theta-role prominence, Li (1990) is able to account for many different types of resultative compounds, which differ as for the number of theta roles of the verb constituents (2).

(2) a. V$_1$ <1, 2> + V2 <1^1, 2^1> = V$_1$ V$_2$ <1-1^1, 2-2^1>
          我　学会　　　　　了　　英语
          wǒ xuéhuì　　　le　　Yīngyǔ
          I   study-know   ASP   English
          'I learned English'
      b. V$_1$ <1, 2> + V$_2$ <1^1> = V$_1$ V$_2$ <1, 2-1^1>
          张三　　　气哭　　　　了　　李四
          Zhāngsān　qìkū　　　le　　Lǐsì
          Zhangsan   annoy-cry   ASP   Lisi
          'Zhangsan annoyed Lisi and as a result Lisi cried'
      c. V$_1$ <1> + V$_2$ <1^1, 2^1> = V$_1$ V$_2$ <1-1^1, 2^1>
          我　玩忘　　　　了　　自己　的　　职责
          wǒ wánwàng　le　　zìjǐ　de　　zhízé
          I   play-forget   ASP   oneself   DE   duty
          'I played (for such a long time) that I forgot my duties'
      d. V$_1$ <1> + V$_2$ <1^1> =
          di. V$_1$ V$_2$ <1-1^1>
              他　　　笑疯　　　　了
              tā　　xiàofēng　le
              he   laugh-insane   ASP
              'He laughed himself insane'

dii. $V_1 V_2 <1, 1^1>$

张三	哭走	了	客人
Zhāngsān	*kūzǒu*	*le*	*kèren*
Zhangsan	cry-leave	ASP	guest

'Zhangsan cried (so much that) many guests left'

It should be noted that in (2d), where the two verb constituents have only one theta role, the identification is optional. Li (1990) argues that this is due to Case theory: since there are two structural Cases, there is no need to force theta-identification. Therefore, it is possible to obtain either a transitive compound (no theta-identification), as in (2d[ii]) or an intransitive compound (theta identification), as in (2 d[i]).

Li (1990) points out that resultative compounds like those in (2b) can be ambiguous between an object-oriented reading and a subject-oriented reading (3).

(3)

张三	骑累	了	马
Zhāngsān	*qílèi*	*le*	*mǎ*
Zhangsan	ride-tired	ASP	horse

    a. 'Zhangsan rode the horse tired'
    b. 'Zhangsan rode the horse and he got tired'

The resultative compound in (3) is formed by a V_1 with two theta roles $<1, 2>$ and a V_2 with only one theta role $<1>$, and thus there is no relative prominence with respect to this theta role. Therefore, there are two kinds of identification allowed: $V_1V_2 <1, 2\text{-}1^1>$ (object-oriented reading) and $V_1V_2 <1\text{-}1^1, 2>$ (subject-oriented reading).

Li's (1990) approach is lexical; this author avoids a syntactic approach because, according to him, if both verbal constituents of a resultative compound projected discrete VPs in the syntax and combined by head movement, then it should be assumed that V_1 selects the VP headed by V_2 as a complement. Nevertheless, Li (1990) argues that there seems not to be any obvious selection relation between V_1 and a complement VP headed by V_2, thus the syntactic analysis seems not to be acceptable (see also Wu 2004).

There are several problems with Li's (1990) analysis (cf. Cheng 1997, Huang C.T.J. 2006). First of all, Li's (1990) analysis of ambiguous cases like those in (3) overgenerates. In fact, it has been shown (e.g. Cheng & Huang 1994, Cheng 1997, Huang 2006) that this kind of ambiguity is eliminated when the object is specific or definite (4).

(4)　　張三　　騎累　　　了　　那　　匹　　马
　　　　Zhāngsān qílèi　　*le*　　*nà*　　*pǐ*　　*mǎ*
　　　　Zhangsan ride-tired ASP that CL horse
　　　　a. 'Zhangsan rode that horse tired'
　　　　b. *'Zhangsan rode that horse and he got tired'

We will return to this issue later on. For the moment being, what is important to stress is that Li's (1990) analysis cannot explain this difference because it does not consider definiteness/referentiality.

Moreover, the theta-identification cannot account for transitive resultative compounds where V_1 is a transtive verb and the postvebal NP is non-subcategorized by the verb, as in the example (37a) in chapter 5, repeated in (5) for the sake of clarity.

(5)　　他　　踢破　　　　了　　球鞋
　　　　tā　　*tīpò*　　　*le*　　*qiúxié*
　　　　he　　kick-break　ASP　sneakers
　　　　'He kicked his sneakers broken'
'

In the sentence in (5), the patient argument of V_1 (e.g. the ball) is not present and the result is predicated of an object that is not the direct object of V_1. Therefore, the theta roles are not exhaustively assigned or identified.

Lastly, Li's (1990) analysis cannot account for causative sentences like those in (6):

(6)　　那　　瓶　　　　酒　　醉倒　　　　了　　李四
　　　　nà　　*píng*　　*jiǔ*　　*zuìdào*　　*le*　　*Lǐsì*
　　　　that　CL (bottle)　wine　drunk-fall　ASP　Lisi
　　　　'That bottle of wine made Lisi drunk and fell'

The two verbs in (6) have a single role, i.e. <1> and <1'>, but the whole compound has the theta grid <2, 1-1'>, with the addition of an external cause, violating head-feature requirements.

Li (1995) provides an account of the causative resultative pattern like the one presented in (6), proposing causative roles (Causee and Affectee) in parallel with traditional thematic roles. Since Li's proposal depends on causativity assignment in resultative compounds, he needs an additional theoretical construct, i.e. the causative hierarchy (cf. Her 2007:227). Causative roles, or c-roles, are assigned directly to syntactic positions according to the causative hierarchy; the conditions of c-roles (causative roles) assignment are: a. The argument in the subject position receives the c-role of Cause from a resultative compound if it receives a theta role only from V_{caus};

b. The argument in the object position receives the c-role of Affectee if it receives a theta role at least from V_{res}. Crucial to Li's analysis is the fact that the causative hierarchy is more prominent and, thus, overrides the thematic hierarchy: "Theta roles can be assigned contrary to the thematic hierarchy if the arguments receiving them are assigned c-roles in ways compatible with the causative hierarchy" ('Well-formedness Condition on Mapping Argument Structure to Syntax'; Li 1995:269).

Even though Li's analysis is plausible, it nevertheless cannot explain examples like those in (5), where the non-subcategorized object is not licensed properly. Her (2007:227) observes that Li's account is observationally adequate and can account for different kinds of mismatches. Furthermore, according to Her, since neither V_{caus} nor V_{res} are causative, Li's (1995) account is able to capture the insight that causativity assignment is an integral part of the lexical formation of the resultative compounds. However, Her (2007:227) also points out some shortcomings of Li's analysis: first of all, Li (1995) must assume a more relaxed interpretation of the theta-Criterion in order to allow linking of both of the two composing roles in a composite role. Moreover, Li (1995) assumes c-role assignment conditions, which are specific to resultative compounding and do not follow from independently motivated principles within the framework adopted. Li's approach depends on an additional mechanism, the causative hierarchy, which must override the semantic hierarchy and does not follow from well-established existing principles.

6.2.2 Her (2004, 2007)

Her (2004, 2007) proposes a lexicalist account alternative to the one proposed by Li (1990) for Chinese resultative compounds. The account proposed by Her is formulated in a revised Lexical Mapping Theory (LMT) of Lexical Functional Grammar (LFG), which incorporates a unified mapping principle. Under this mapping principle (or θ-Criterion), a composite role, formed by two composing roles, receives syntactic assignment via one composite role only, while the second role is suppressed. In fact, the mapping principle entails that only one composing role receives syntactic

assignment, thus the other must be suppressed; suppression, then, is motivated and constrained by the mapping principle[1].

The theory of strict one-to-one linking and suppression predicts that resultative compounding should generate the following a-structures[2] (7) (the single cross-out indicates the suppressed role):

(7)   a. V_{caus} <x y> + V_{res} <z> →
                V_{caus} V_{res} <α β>, where <α β> = (i) <x y-z̶>
                                            (ii) <x[caus] y̶-z[af]>
                                            (iii) <x-z̶ y>
                                            (iv) <y[caus] x̶-z[af]>

        b. V_{caus} <x> + V_{res} <z> →
                V_{caus} V_{res} <α (β)>, where <α β> = (i) <x-z̶>
                                           (i) <x̶-z>
                                           (iii) <x[caus] z[af]>
      (Her 2007:237)

In this way, Her (2004, 2007) is able to account for the possible ambiguities generated by a resultative compound such as 追累 *zhuīlèi* (8). See the example in (8), adapted from Her (2007:234-235; 2004:25):

(8)   张三   追累   了   李四
        Zhāngsān   *zhuīlèi*   *le*   *Lǐsì*
        Zhangsan   chase-tired   ASP   Lisi

    a. 'Zhangsan chased Lisi to the extent of making Lisi tired / and Lisi got tired'
        <x   y-z̶>   (non-causative, 7a(i)) (*x* = *ag*, *y* = *th*)
          S   O
        Zhangsan   Lisi
        <x[caus]   y̶-z[af]> (causative, 7a (ii)) (*x* = *ag*, *z* = *th*)
          S   O
        Zhangsan   Lisi

---

[1] Her (2004) also stresses that a suppressed role may be indirectly linked to a syntactic function; the suppressed agent in passives, for example, can be semantically linked to the *by*-phrase (cf. Bresnan 1994:81).

[2] In LFG, a-structure (or argument structure) interfaces between the lexical semantic structure and the syntactic structure of a predicator (cf. Bresnan & Zaenen 1990, Bresnan 2001, among others):
    lexical semantics (e.g. *sink* <sinker sunk>)
    ↓
    a-structure (e.g. *sink* <ag th>)
    ↓
    syntactic structure (e.g. [PRED 'sink <(↑SUBJ) (↑OBJ)>])
    (Her 2007:227)

b. *'Lisi chased Zhangsan and Zhangsan got tired' (non existent) (*x* = *ag, y =*
th, z= th)

      <x   y-z>
       *O   *S
      Lisi   Zhangsan

c. 'Zhangsan chased Lisi and (Zhangsan) got tired'

     <x-~~z~~   y>   (non-causative, 7a(iii)) (*x* = *ag, y = th*)
      S   O
    Zhangsan   Lisi

d. 'Lisi chased Zhangsan and was made tired'

    <~~x~~-z[af]>   y[caus] (causative, 7a(iv)) (*y* = *th, z = th*)
     O   S
     Lisi   Zhangsan

The example in (8d) is a case of argument-function mismatch. Li (1995, 1999) posits that since neither V_{caus} nor V_{res} is causative on its own; causativity in a resultative compound must be attributed to the lexical formation (see the previous section). Li (1999:480) proposes a universal default hypothesis according to which causative roles are assigned when a resultative construction is formed. Her (2007:234) points out that, in a causative resultative compound, the most natural place for the Affectee [af] is the theta-role *z*, the only role required by V_{res}. In Her (2007), the author extends his own claim (from Her 1997:153) that the argument structure where the role from V_{res} is suppressed cannot be causative, and proposes a constraint on causativity assignment in resultative compounding: "An unsuppressed role from V_{res} receives [af] iff an unsuppressed role from V_{caus} exists to receive [caus]". In this way there is no need for introducing a causative hierarchy (cf. Li 1995); the linking in (7d) is possible: the theta-role *z* is not suppressed and thus receives [af], while an unsuppressed theta-role *y* from V_{caus} exists to receive [caus]. The prominence issue between the two unsuppressed roles in (8d) is predictable, since an affected theme is less prominent than a causer theme according to the Proto-Agent and Proto-Patient properties (cf. Dowty 1991): [caus] is a prototypical property associated with the Agent role and [af] is associated with the prototypical Patient; the former is more prominent than the latter. Therefore, between the role *y* [caus] and *z* [af] (both patients/themes), the former is more prominent. The theta-role *y*, being the more prominent, is mapped into the subject position, thus the theta-role *z* can be only

mapped into object position (cf. Her 2007:234)[3]. No violation of the thematic roles happens.

The lexicalist account proposed by Her (2004, 2007) seems to be able to explain better some phenomena which are problematic in Li's (1990) approach and to account for the relations between syntactic assignment and semantic interpretation. This approach seems also to be more economic, since it does not need to make use of additional mechanisms, such as the introduction of a causative hierarchy (cf. Li 1995), to explain some kind of mismatches. However, Her's approach, relying on theta roles, the thematic hierarchy and the prominence of proto-roles, requires the formulation of specific rules to account for some phenomena. Furthermore, Shibagaki (2009) observes that, although Her (2007) criticizes Li (1995) because his c-role assignment conditions are specific to the resultative compounding (as we have seen in the previous section), nevertheless Her's analysis is also specific to resultative compounds. Moreover, it still remains to be explained why it is not always possible to obtain the three different readings found in the example in (8) for other compounds of the same type. Shibagaki (2009) further highlights that Her's analysis cannot account for the ungrammaticality of a sentence like the one in (9):

(9)　　*你　会　吃死　　这　种　药
　　　　*nǐ　huì　chīsǐ　　zhè　zhǒng　yào
　　　　you　will　eat-die　　this　CL　drug
　　　'You will eat the drug and you will die'

Shibagaki (2009) stresses the fact that Her's analysis would suggest that the sentence in (9) is grammatical, getting the reading corresponding to the structure in (7aiii) (cf. 8c); nevertheless, the sentence is actually ungrammatical. Finally, Her takes into account only the two most common combinations of resultatives, i.e. $V_{trans}+V_{int}$ and $V_{int}+V_{int}$ but, as we will see, other combinations are possible as well, and so it remains to be shown how the linking works in those cases.

---

[3] Her (2006) also observes that while (8a), (8c) and (8d) are all well formed within the theory, (8a) is the most accessible. For an explanation, see Her (2007:241-243). Note also that, while the interpretation in (8a) is generally accepted, the others are often called into question. For example, Cheng (1997:178, fn. 7) judges the interpretation in (8c) quite unlikely (cf. also 6.2.5, ex.20).

6.2.3 Huang (1992)

Huang (1992) proposes a syntactic account of resultative constructions in Chinese, based on a theory of Control. Huang treats resultative compounds on a par with resultative phrases (cf. chapter 5, fn. 14), as it is shown in (10) and (11) respectively, from Cheng (1997:175).

(10) a. 张三　　哭　　得　　手帕　　都　　湿　　了
　　　　Zhāngsān　kū　de　shǒupà　dōu　shī　le
　　　　Zhangsan　cry　DE₂　handkerchief　all　wet　ASP
　　　　'Zhangsan cried so much that the handkerchief got wet'

b.

```
                  VP
                 /  \
               NP    V¹
          张三 'Zhangsan' /  \
                       V     VP
                            /  \
                         NPᵢ    V¹
              手帕 shǒupà 'handkerchief' / \
                               V        RC
                     哭得 kū de 'cry-DE₂'  △
                                   Proᵢ 都湿 了
                           Proᵢ dōu shī le 'all wet- ASP'
```
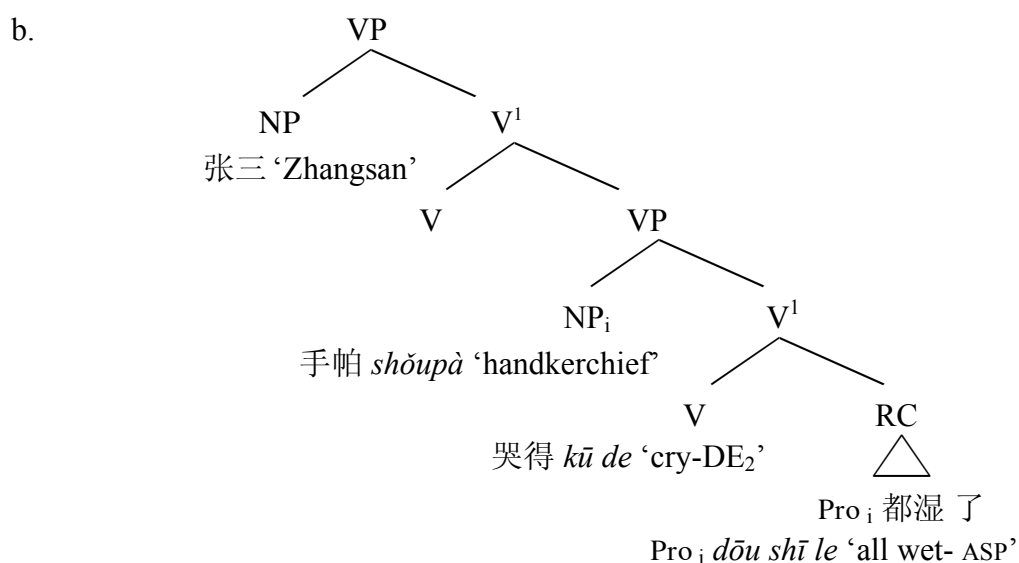
(11) a. 张三　　哭湿　　　了　　手帕
　　　　Zhāngsān　kūshī　le　shǒupà
　　　　Zhangsan　cry-wet　ASP　handkerchief
　　　　'Zhangsan cried the handkerchief wet'

b.

```
                  VP
                 /  \
               NP    V¹
          张三 'Zhangsan' /  \
                       V     VP
                            /  \
                          NP    V¹
              手帕 shǒupà 'handkerchief' / \
                               V        RC
                        哭 kū 'cry'      △
                                   湿了 shī-le 'wet- ASP'
```
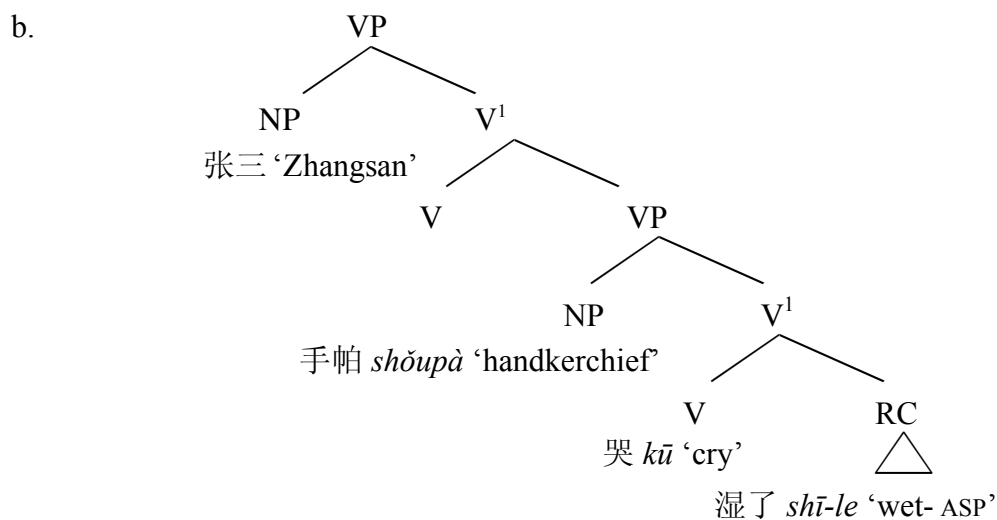
In (10), 哭得 *kū de* 'cry-DE$_2$' selects and theta-marks the resultative clause [Pro 都 湿 了 *dōu shī le*] 'all wet- ASP'; V compositionally takes 手帕 *shǒupà* 'handkerchief' as object, which, being the closest c-commanding NP to Pro, it is the one which controls Pro in the resultative clause (cf. 5.3.3.1). The verb 哭得 *kū de* 'cry- DE$_2$', then, moves to the higher empty verb (cf. Larson 1988). The structure in (11) is similar to the one in (10), the only difference being that (10) is a phrasal resultative clause, whereas (11) is a lexical resultative clause. The compound verb is derived through a process of reanalysis or incorporation (cf. Cheng 1997:174-175).

Huang (1992) explains unergative-transitive alternations like those in chapter 5, example (46), involving the resultative 哭醒 *kūxǐng* 'cry-awake' (cf. 5.3.2), on the basis of the contrast between subject-control vs. object-control structures: the intransitive version is a subject-control structure, while the transitive version is an object-control structure.

Moreover, Huang (1992) considers causative structures like those in (6), where the subject, 那瓶酒 *nà píng jiǔ* 'that bottle of wine', is a causer: from an unaccusative resultative verb like 醉倒 *zuìdào* 'drink-fall' (12a), it can be derived a causative structure like the one in (6), by adding an argument to the argument structure of the verb. In the presence of a causer, which can act as the external argument of the verb, structures like those in (6) can be derived (12b). See the examples in (12), from Cheng (1997:176-177):

(12) a. 李四   醉倒   了
      Lǐsì   *zuìdào*   *le*
      Lisi   drunk-fall ASP
      'Lisi got drunk and as a result fell'
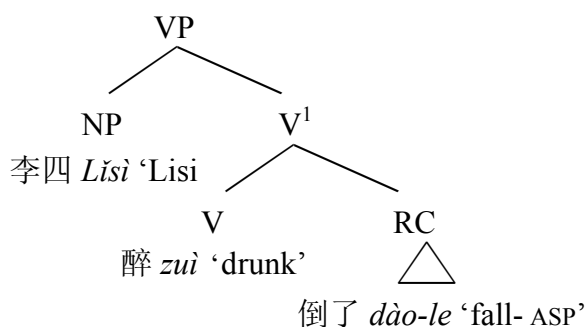
b.

那	瓶	酒	醉倒	了	李四
nà	*píng*	*jiǔ*	*zuìdào*	*le*	*Lǐsì*
that	CL (bottle)	wine	drunk-fall	ASP	Lisi

'That bottle of wine made Lisi drunk and fell'

```
                        VP
                       /  \
                    NP      V¹
那瓶酒 nà píng jiǔ 'that bottle of wine'
                          /    \
                        V        VP
                               /    \
                            NP        V¹
                    李四 Lǐsì 'Lisi'
                                    /    \
                                  V        RC
                            醉 zuì  'drunk'   △
                                         倒了 dào-le 'fall- ASP'
```
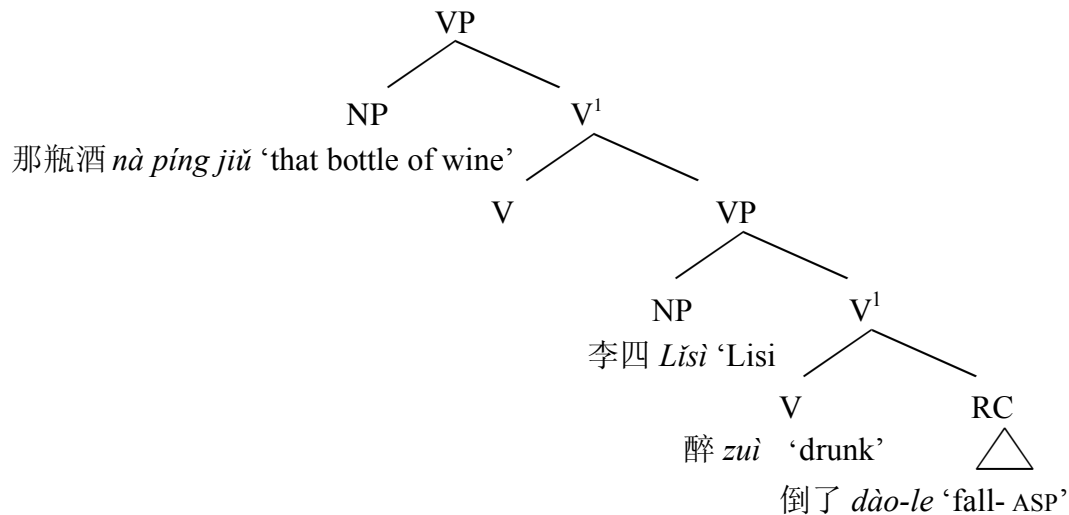
While in examples like those in chapter 5, example (46b), 他哭醒了小孩 *tā kūxǐng le xiǎohái* 'He cried the child awake (He cried and as a result the child awoke)', there is a direct relationship between the subject and the action as well as between the action and the object, i.e. the child awoke because he cried, in (12b) the bottle of wine is only an indirect causer, i.e. it is not involved neither in the act of drinking nor in the result of getting drunk; causation is mediated by the volition of the NP object, which drank the bottle of wine and as a result got too much drunk.

Huang's (1993) analysis, despite being quite attractive, fails to explain why causation by addition of an external argument (12b) is not always allowed (cf.6.3.2.5). Moreover, it is not clear how it is possible to account for ambiguities like those in (4) adopting this kind of syntactic approach. Lastly, Huang H.C. (2006) points out that Huang (1992) does not mention what is the contribution of the argument structures of the component verbs to the resultative constructions.

6.2.4 Cheng & Huang (1994)

Cheng & Huang (1994) argue that the argument structure of a resultative compound derives from the composition of the event structure of the two constituents rather than from their transitivity properties. According to Cheng & Huang, there are four types of resultative compounds, which parallel the types found among simple verbs, as illustrated in (13) (examples adapted from Cheng and Huang, 1994:188-189):

(13) a. 张三   骑累   了。   (unergative)
     Zhāngsān   qílèi   le
     Zhangsan   ride-tired ASP
     'Zhangsan rode himself tired.'

   b. 张三   骑累   了   两   匹   马。   (transitive)
     Zhāngsān   qílèi   le   liǎng pǐ   mǎ
     Zhangsan   ride-tired ASP   two   CL   horse
     'Zhangsan rode two horses tired.'

   c. 张三   气死   了。   (ergative)
     Zhāngsān   qìsǐ   le
     Zhangsan   anger-die   ASP
     'Zhangsan got anger to death (got extremely angry).'

   d. 这 件   事   气死   了   张。   (causative)
     zhè jiàn   shì   qìsǐ   le   Zhāngsān
     this CL   matter anger-die   ASP   Zhangsan
     'This matter angered Zhangsan to death.'

The unergative pattern in (13a) involves an activity-denoting V_1 and alternates with the transitive pattern in (13b); the pattern in (13a) and (13b) form an unergative/transitive alternation (cf. 5.3.2). The alternation exemplified in (13c) and (13d), instead, is causative alternation: in both the sentence there is a Theme and they differ only in the presence (13d) or absence (13c) of a Causer. When there is no Causer, the Theme occurs in the subject position; when there is a Causer, the Theme is forced to occur in the object position, since the subject position is occupied by the Causer (cf. Cheng & Huang 1994:189).

Cheng & Huang (1994:198-199) argue that the event type of a resultative compound depends on the event-type of V_1 and propose that resultative compounds have an underlying complex event structure in which the event denoted by V_1 takes the event denoted by V_2 as its complement. Therefore, unergative and transitive resultative compounds have the event structure in (14), which represents the structure of the active resultative verb compound. Active resultative compounds obligatory selects an Agent as their external argument[4]; some of them also may, or must, take a Theme, while others do not. Therefore three possible argument structures are defined (14) (cf. Cheng & Huang 1994:198).

---

[4] Recall that Chinese resultative compounds apparently also allow inanimate instigators (like instruments) as subjects (cf. Chen J. 2008 and 5.3.3.2, ex. 56).

(14) [_RV_ V1_Active_ [V2 _state/change of state_]]
    a. <Agent>   (unergative)
    b. <Agent, Theme>   (transitive)
    c. <Agent, (Theme)>   (mixed)

Some examples of resultative compounds with an active V₁ are: 跑累 *pǎolèi* 'run-tired' (unergative); 踢破 *tīpò* 'kick-break' (transitive); 哭醒 *kūxǐng* 'cry-awake' (mixed).

In contrast, ergatives and causatives are non-active resultative verb compounds and have the structure in (15). They obligatory select a theme or experiencer/causer as their internal argument. If V₁ selects a causer external argument too, then the compound is causative; if the V₁ does not select a causer as its external argument, then it is ergative. The two possible argument structures are those in (15) (cf. Cheng & Huang 1994:199).

(15) [_RV_ V1_Non active_ [V2 _state/change of state_]]
    a. <Theme/experiencer/causee>   (ergative)
    b. <Causer, Theme/experiencer/causee> (causative)

Examples of resultative compounds with a non-active V₁ are: 醉倒 *zuìdǎo* 'drunk-fall', 忙累 *mánglèi* 'busy-tired', 累死 *lèisǐ* 'tired-die'.

Moreover, Cheng & Huang (1994) also observe that alternations based on verb classes are not always preserved: some resultative verb compounds with unergative V₁s manifest not only the unergative/transitive alternation presented in chapter 5, example (46), but also the unergative/causative alternation (cf. 5.3.2). For the sake of clarity, we repeat the alternations presented in 5.3.2, examples (46) and (49), in (16):

(16)   a. 他   哭醒   了。
         tā *kūxǐng*   *le*
         he cry-awake   ASP
         'He cried (himself) awake.'
   b. 他   哭醒   了   小孩。
         tā *kūxǐng*   *le*   *xiǎohái*
         he cry-awake   ASP   child
         'He cried the child awake (He cried and as a result the child awoke).'
         (From Cheng & Huang 1994:190)
   c. 一   个   恶梦   哭醒   了   他。
         yī *ge* *èmèng*   *kūxǐng*   *le* *tā*
         one CL nightmare cry-awake ASP he
         'A nightmare caused him to cry (himself) awake.'

Cheng & Huang (1994) observe that the examples in (16) suggest that both the transitive and the causative patterns may be derived from the same (unergative) intransitive (16a). However, they observe that in the causative use, the subject of V_1 is an external Causer, not a pure Agent, while the subject of V_1 in the transitive pattern is an Agent; thus they assume that the alternation (16a)/(16c) is not an unergative/causative alternation but, rather, an ergative/causative alternation (p.190). Cheng & Huang (1994) argue that a resultative compound with a V_1 that denotes an activity can be used in the non-active sense when there is an external Causer and the V_1's logical subject is not the inititator of the event but rather a Causee/Experiencer. Therefore, they assume that the intransitive counterpart of the sentence (16c) is an ergative sentence with a Causee subject (which is possible when it is understood from the context that something has caused the occurrence of the event). In the absence of a Causer (either overt or understood), the subject of V_1 is considered an Agent by default and the resultative compound is unergative (16a). Therefore, if the event of crying occurs without relevant external cause, the resultative compound is used unergatively; if the crying event occurs under some relevant external cause, which is not part of the sentence, the resultative compound is used ergatively; if the crying event occurs under some relevant external cause, which is a syntactic argument, the resultative compound is used causatively (Cheng & Huang 1994:202).

Cheng & Huang's (1994) analysis based on the event structure of resultative compounds avoids the problems arising from an approach based on the argument structure of the verb constituents of a resultative compound (e.g. Li Y. 1990). Furthermore, according to Cheng & Huang (1994), on the assumption that V_1 is the head of the compound, ambiguities like those presented in (3) can be explained: when the object of a resultative compound is used non-referentially, it cannot, and does not indeed, enter into coreference relations with other NPs. In this case, the V_2 may be predicated of the matrix subject. In contrast, if the object is referential, it must be interpreted as co-referential with the subject of V_2. Cheng & Huang claim that this is possible only assuming that V_1 is the head of the compound, while it would not be possible if V_2 were the head. However, the non-referentiality cannot help to explain

while a sentence like the one in (17) is ambiguous, despite apparently having a referential object[5].

(17) 张三   追累   了   李四 (cf. ex. 8)
Zhāngsān   zhuīlèi   le   Lǐsì
Zhangsan   chase-tired   ASP   Lisi
    a. 'Zhangsan chased Lisi tired'
    b. 'Zhangsan chased Lisi and got tired'

Moreover, Li (2008:736-737) points out that a problem in Cheng & Huang's (1994) analysis consists in their implicit assumption that, as far as active V_1s with both the transitive and the causative use are concerned, the former use is active, while the latter is non-active. Li (2008) suggests that this is a problem for their view, according to which the event type of the whole compound is determined by V_1.

6.2.5 Cheng (1997)

According to Cheng (1997), neither a pure lexicalist analysis (e.g. Li Y. 1990) nor a pure syntactic analysis (e.g. Huang 1992) can successfully account for Chinese resultative compounds. She proposes that there are two types of resultative compounds: lexical and syntactic. According to Cheng (1997), lexical compounds are formed in a way similar to conflation in English (cf. Hale & Keyser 1993); thus she adopts an analysis based on the l-syntax (lexical syntax). According to this view, a compound like 追累 *zhuīlèi* 'chase-tired' (see ex.17) has the LRS (Lexical Relation Structure) in (18).

(18)

```
                    VP
                   /  \
                  V    VP
            追 zhuī      /  \
            'chase'    NP    V¹
                           /    \
                          V      AP
                          ▲       |
                          |       A
                          |    累 lèi 'tired'
                          |_____|
```

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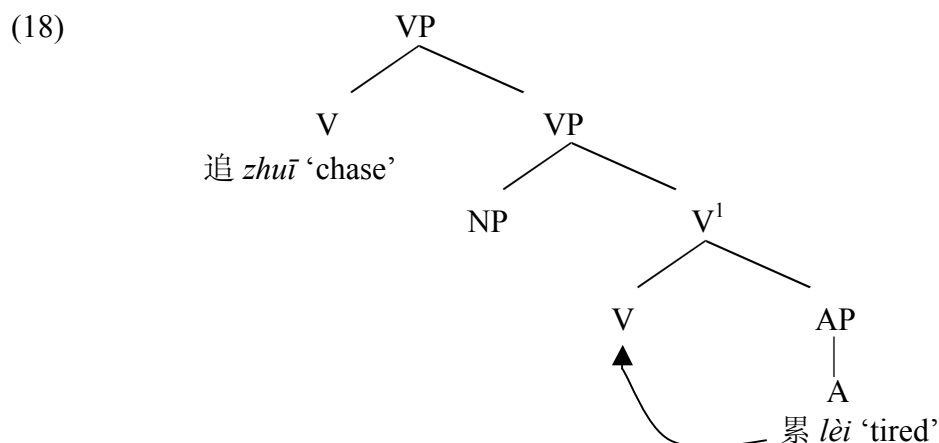
[5] Cheng & Huang (1994:218, fn. 8) observe that for the object to be interpreted in the part-of-an-activity reading, it can be a bare NP, or a proper noun, but not a quantificational NP, e.g. 三个胡匪 *sān ge húfěi* 'three thieves', in which case it only has the object-oriented reading (cf. 6.3.2.2, ex. 71).

Cheng (1997:183) observes that the adjectival verb 累 *lèi* 'tired' is predicated of the NP in the inner VP in l-syntax. Since 累 *lèi* 'tired' is predicated of the inner NP, the object NP of the compound in s-syntax will be the element undergoing the change of state. In l-syntax, 累 *lèi* 'tired' first incorporates into the empty verb, then the complex verb moves to the higher verb 追 *zhuī* 'chase', giving the output in (19). In English, the verb which takes an AP is an empty verb and thus represents an elementary change of state. In contrast, since the verb is filled in Mandarin, the state is intended as achieved as part of a dynamic event.

（19）

追累 *zhuīlèi* 'chase-tired'

```
                    VP
                   /  \
                  V    VP
                      /  \
                    NP    V¹
                         /  \
                        V    AP
```
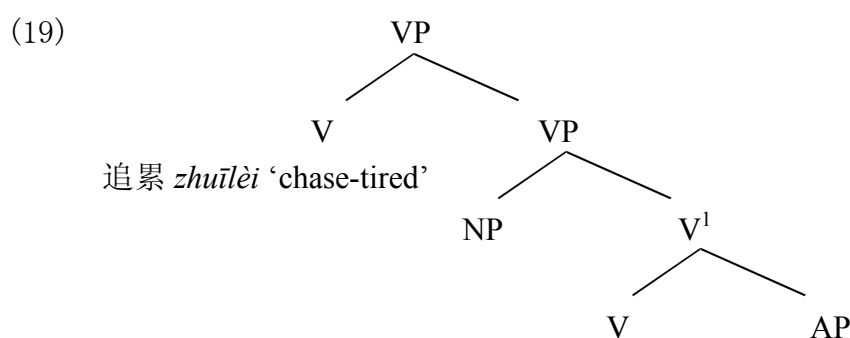
According to Cheng (1997:182), the sentence in (17), repeated in (20), can have the following interpretations[6]:

(20)　張三　　　　追累　　　　了　李四
　　　Zhāngsān　*zhuīlèi*　*le*　*Lǐsì*
　　　Zhangsan　　chase-tired　ASP　Lisi
　　　a.　'Zhangsan chased Lisi and Lisi became tired'
　　　b.　'Lisi chased Zhangsan and Lisi became tired'
　　　c.　* 'Zhangsan made Lisi tired by getting him involved in the act
　　　　　of chasing'

Cheng proposes that the sentence in (20) is ambiguous because in (20a) the inner subject is the chasee, while in (20b) it is the chaser. Cheng points out that in the l-syntax there is a variable that can represent one of the participants, but this role is not stipulated in LRS, thus it can be either the chaser or the chasee. If the inner NP in the l-syntax is the chasee, then the only participant left in the s-syntax is the chaser, which is the subject (reading 20a)[7]. In contrast, if the inner NP in the l-syntax is the chaser,

---

[6] As we have mentioned, Cheng (1997:178, fn.7) judges the interpretation given in (8c), i.e. 'Zhangsan chased Lisi and (Zhangsan) got tired', quite unlikely (cf. 6.2.2 and fn.3 above).

[7] Cheng (1997) observes that examples like the one in (5) show that the object does not have to be an explicit participant of the event 踢 *tī* 'kick'. Therefore, the compound 踢破 *tīpò* 'kick-break' can be

then the only participant left in the s-syntax is the chasee, which is the subject of the sentence (reading 20b). In this way problems related to theta-role assignment are avoided, and no argument sharing is required, since the analysis is not based on theta roles but on full interpretation (Chomsky 1986).

As for the ambiguity in (3), arising with a non-referential object like 马 *mǎ* 'horse', Cheng (1997:187) proposes that the reading in (3b) arises from incorporation of the non-referential object after that the adjectival verb 累 *lèi* 'tired' has incorporated into the verb 骑 *qí* 'ride' and that the whole complex verb has moved to the upper verb (21)[8]. Incorporation prevents the object NP from being interpreted as the subject of 累 *lèi* 'tired'. Obviously, specificity of the object is incompatible with incorporation.

(21)
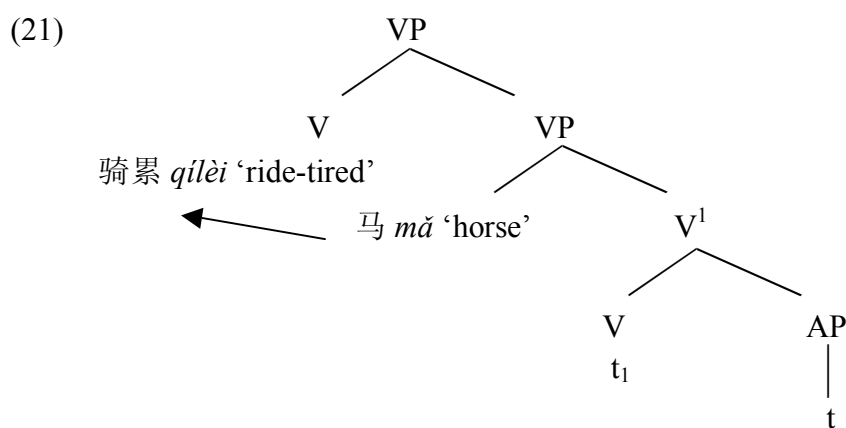
Moreover, Cheng (1997:190-191) also accounts for the unergative/transitive alternation of a verb like 哭醒 *kūxǐng* 'cry-awake': the intransitive version (cf. ex. 16a) has an internal subject which is the affected element, which moves to the surface subject position at S-structure (22a); in contrast, the transitive version (cf. ex. 16b) involves no movement, and the whole VP is predicated of an external NP (22b).

predicated of a subject, which is the agent of the kicking event, ignoring the patient. The object 鞋 *xié* 'shoes' is an indirect participant.

[8] Cheng (1997:187, fn. 11) points out that in Hale & Keyser (1993) it is impossible to incorporate an internal subject NP to the upper V, e.g *they wined into the bottle* (cf. *he got wine into the bottle*). Nevertheless, Cheng suggests that examples like the one in (20) in Chinese are allowed because the NP is not incorporated into the empty V but into a filled V.

(22) a.

```
        VP
       /  \
      V    VP
   哭 kū 'cry'  / \
            NP   V¹
                /  \
               V    AP
                    |
                    A
                 醒 xǐng 'awake'
```
→
```
        IP
       /  \
     NP₁   I¹
          /  \
         I    VP
             /  \
            V    NP
    哭醒 kūxǐng   t₁
    'cry-awake'
```

b.
```
        IP
       /  \
     NP    I¹
     X    /  \
         I    VP
             /  \
            V    NP
    哭醒 kūxǐng   Y
    'cry-awake'
```
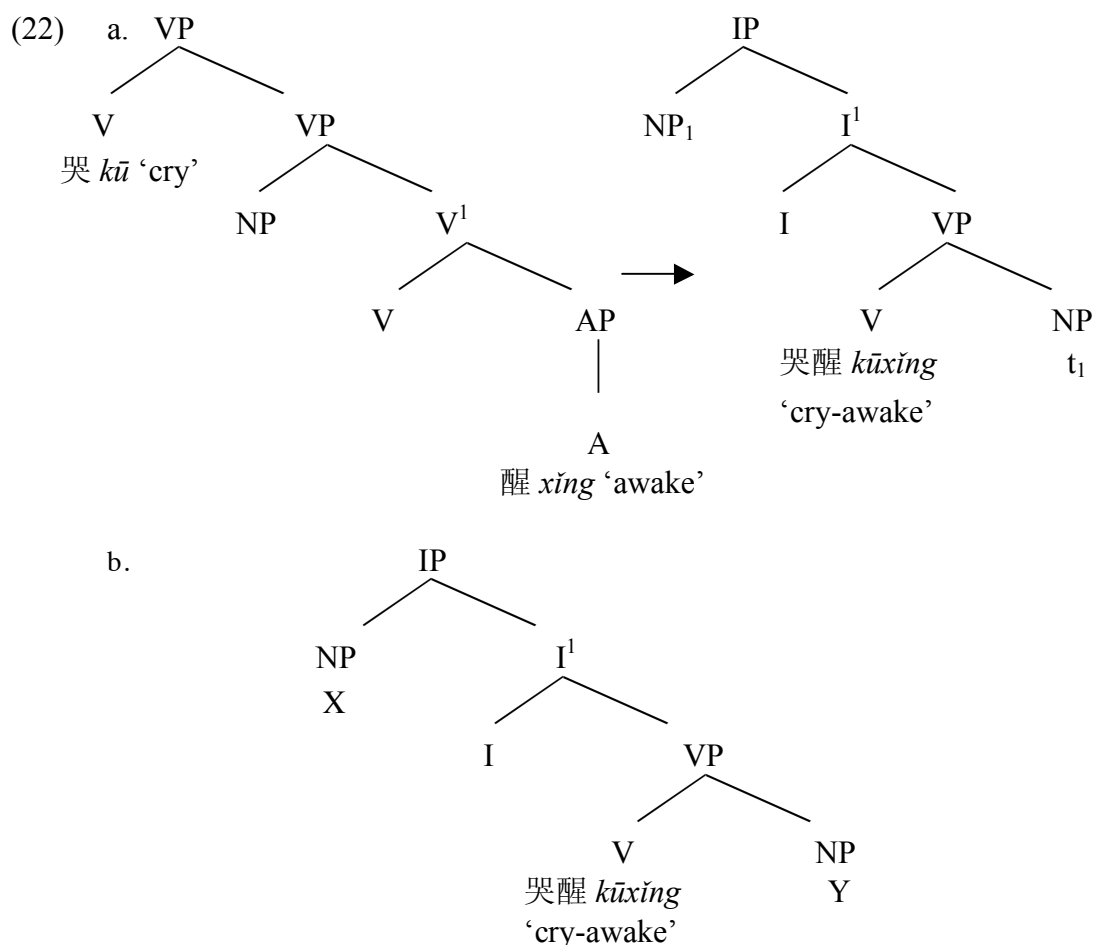
According to Cheng (1997), 哭醒 *kūxǐng* 'cry-awake' is an inherent causative: the s-syntactic subject has a direct causative relationship with the s-syntactic object (internal subject in l-syntax), i.e. the affected argument.

Cheng (1997) distinguishes these examples from other causative compounds like 醉倒 *zuìdào* 'drunk-fall' in (23b), where, according to her, the relation between the causer and the causee is indirect. Cheng (1997) suggests that they are formed in syntax. Cheng proposes that the LRS of 醉倒 *zuìdào* 'drunk-fall' is that shown in (23a), which represents a pure causative structure[9]. At s-structure the verb phrase headed by 醉倒 *zuìdào* 'drunk-fall' is predicated of an external NP, thus we obtain the intransitive 醉倒 *zuìdào* 'drunk-fall'. If an extra causative projection can be added onto the s-structure representation, we can derive a syntactic causative construction (23b).

---

[9] The event represented by the first verb implies the second verb: $e_1 \rightarrow e_2$. Note also that in Hale & Keyser's (1993) framework, VPs are not predicative in l-syntax.

(23)   a.

```
              VP                          IP
           ╱     ╲                     ╱     ╲
          V       VP         ⟶       NP      I¹
       醉 zuì    │                          ╱  ╲
      'drunk'    V                         I    VP
              倒 dào 'fall'                      │
                                                 V
                                            醉倒 zuìdào
                                             'drunk-fall'
```

b.

```
              IP
           ╱     ╲
          NP      I¹
          X      ╱  ╲
                I    VP
                   ╱    ╲
                  V      VP
               CAUSE   ╱    ╲
                      NP     V¹
                             │
                             V
                    醉倒 zuìdào 'drunk-fall'
```
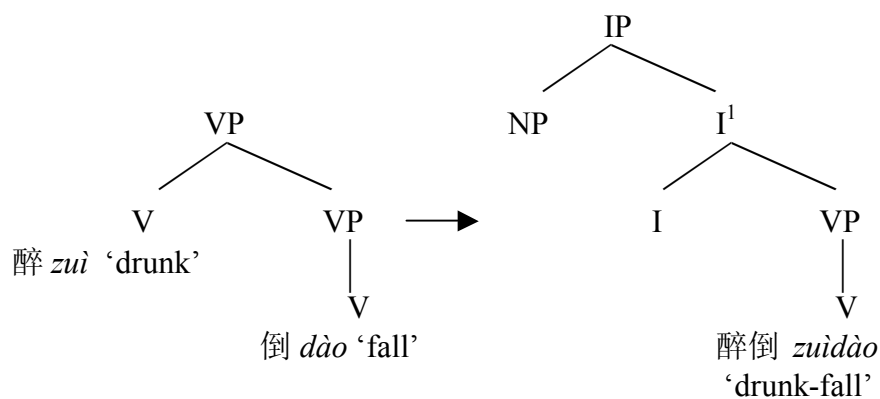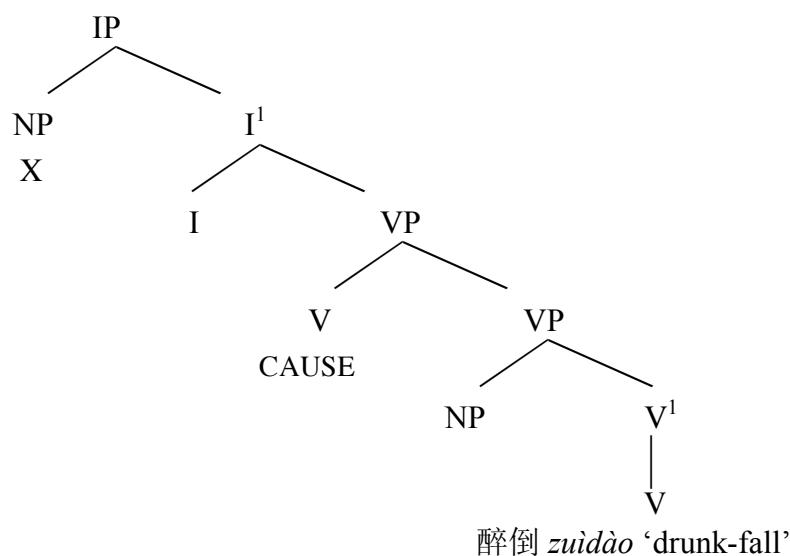
This approach is quite appealing and has the advantage of reducing problems derived from theta-roles and the requirement of argument sharing. Moreover, it is able to account for some of the ambiguities found with resultatives. Nevertheless, such approach requires the postulation of the existence of two different levels of syntax which apparently share the same kind of rules.

6.2.6 Sybesma (1999)

Sybesma (1999) proposes a syntactic analysis of Chinese resultative compounds based on Hoekstra's (1988, 1992) small clause analysis (cf. also Sybesma 1992, Xiong & Liu 2006). Hoekstra's proposal is based on the assumption that both transitive and intransitive activity verbs may select for a small clause representing a result state predicated of an NP which is the subject of the small clause (cf. also 5.2.6), as for example in (24):

(24)   a. *The dog barked* [sc *the child awake*]
       b. *She washed* [sc *the clothes clean*]

According to Hoekstra (1992), the small clause serves to turn a non-telic predicate into a telic one, by specifying the state that terminates the event. It is this aspectual role which licenses the selection relation between the main verb and the small clause as its complement.

As far as Chinese resultative compounds are concerned, Sybesma (1992, 1999), following Hoekstra's approach, proposes that V_2 is base-generated in a small clause selected by V_1, and that V_2 predicates onto the NP subject of the small clause. Before spell-out, V_2 raises up to adjoin to V_1, as it is shown in (25c), which shows only the VP structure.

(25)   a. 洗干净　　衣服
    xǐgānjìng　yīfu
    wash-clean　clothes
    'to wash the clothes clean'
   b. 洗 [sc 衣服干净]
    xǐ [sc *yīfu gānjìng*]
    wash [sc clothes clean]

   c.
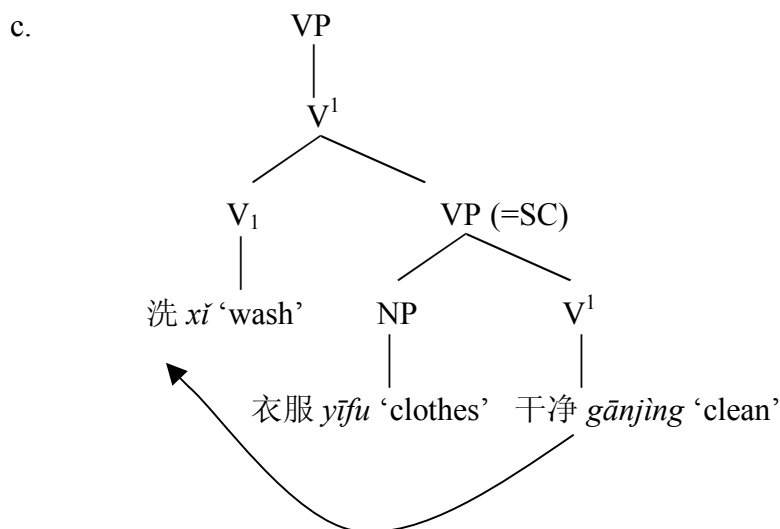
Sybesma (1999) observes, in support of this analysis, that historically there were sequences with the linear order [V_1 NP V_2] (cf. 3.4.2), which parallel the underlying structure in (25) and which at a later stage assumed the order [V_1 V_2 NP], i.e. the linear order of the synchronic resultative compound. Therefore, the small clause analysis seems to suggest that the synchronic form of resultative compounds is still derived from the base order of earlier resultative constructions.

As in Hoekstra's (1992) analysis, there is no thematic relation between V_1 and the NP. In (21), the NP 衣服 *yīfu* 'clothes' is licensed by its predication relation with the

small clause predicate 干净 *gānjìng* 'clean': the NP 衣服 *yīfu* 'clothes' is base-generated inside the small clause, as subject of the predicate 干净 *gānjìng* 'clean'.

The fact that there is no thematic relation between V_1 and the NP helps to explain all those cases in which, in a transitive resultative compound, there is an unselected object (e.g. chapter 5, exx. 37 and 70). Consider, for example, the sentence (70a), chapter 5: 小王洗湿了鞋 *Xiǎo Wáng xǐshī le xié* 'Xiao Wang washed the shoes wet'; we have seen that, although 鞋 *xié* 'shoes' can in principle be considered as a direct object of the verb 洗 *xǐ* 'wash' and, thus, it could be considered as a subcategorized object, nevertheless it is not: the shoes got wet as a result of a washing event in which Xiao Wang was washing something else, e.g. clothes. In the small clause analysis, this does not raise problems, since the NP 鞋 *xié* 'shoes' has no thematic relation with V_1 and is licensed by its predicative relation with the predicate of the small clause, 湿 *shī* 'wet'.

Sybesma (1999) suggests that there is only a pragmatic linking between V_1 and the NP (cf. Hoekstra's 1988 'shadow interpretation'), thus the interpretation of the structure in (25) should essentially be as in (26) (cf. also Wu 2004:172):

(26)   a. There is a washing event.
        b. The state of the clothes being clean aspectually closes the washing event.
- Pragmatic implicature: if the clothes are clean and are part of a washing event, then they can be assumed to have been washed.
- Pragmatically the NP is inferred to be the object of V_1.

Sybesma's (1999) small clause account of resultative compounds shows that Li's (1990) objection that a syntatic approach for Chinese resultatives cannot hold (since V_1 cannot select for a second VP headed by V_2; cf.6.2.1) is not tenable: the selection relation in a small clause account may be motivated aspectually, since the small clause is assumed to provide a telic bound to the action expressed by V_1 (cf. Wu 2004:173)[10].

6.2.7 Huang H.C. (2006)

Huang H.C. (2006) proposes a constructional approach to Chinese resultative compounds. Following Boas (2003), Huang assumes that both linguistic knowledge and encyclopedic knowledge (i.e. real world knowledge) must be part of the lexical

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[10] For a critique of the small clause approach in Chinese, see Wu (2004:173-180).

semantic information, thus they are inseparable. To express both types of information, Boas (2003) suggests to use an event-frame "to denote an abstract event or scene from the beginning to its end" (p. 168). In Boas's representation of an event, along with Agent (Ag) and Patient (Pt) participants, the world knowledge (W) is represented as well. Temporal, spatial, and force-dynamic information are also included in the event-frame.

H.C. (2006) applies Boas's theory to Chinese. For example, the event frames for intransitive and transitive verbs are shown in (27) and (28) respectively[11].

(27)   Event-frame for Chinese intransitive verbs[12]

GOAL
Ag (p1)
(W p2)

（28）   Event-frame for Chinese transitive verbs

GOAL
Ag (p1)
(W p2)
Pt (p3)

The event participants of the event-frames are realized in syntax via the linking rules. Huang H.C. (2006:21), adapting from Boas (2003), proposes that "required event participants in the event-frames must be linked to surface elements and that every surface element get linked *at least once* from verbal and/or constructional event participants in order for it to be properly interpreted". Therefore, Huang suggests the following linking rules: a. each required event participants in the event-frames must be realized in the surface form; b. each surface element must get linked *at least once* from the event participants (Huang H.C. 2006:21).

---

[11] Huang H.C. (2006) highlights that Boas uses the labels SOURCE, PATH and GOAL in a temporal rather than spatial sense, to denote the beginning, the middle, and the end state of an event. However, since the focus is on the resultative constructions, Huang decides to show only the goal frame. Ag, W, Pt, p1, p2, and p3 are called 'event participants'. The properties of Ag, W, and Pt are called p1, p2, and p3, respectively. Since the event-frame is a kind of construction, both the form (event participants) and the meaning (properties of the event participants) are specified (p. 20).

[12] Huang H.C. (2006) stresses that, although unergatives and unaccusatives have distinct participants (Agent for unergatives and Theme/Experiencer/Causee for unaccusatives), the event-frame in (27) does not distinguish between them. Huang explains that, following the idea of proto-roles (Dowty 1991), it is assumed that there is gradience in the thematic roles. Every role is somewhat Proto-Agent-like or Proto-Patient-like. Thus the event-frame of intransitives does not make an unaccusativity distinction.

Using this approach, Huang H.C. (2006) gives an account of Chinese resultative compounds. In (29) the representation of resultative compounds with an intransitive V₁[13] is shown (Huang H.C. 2006:25).

(29)   a. 他们   跳累   了
           tāmen   *tiàolèi*   *le*
           they   jump-tired   ASP
           'They jumped themselves tired'

	他们	跳	累	了
	tāmen	*tiào*	*lèi*	*le*
	they	jump	tired	ASP
Syntactic form	NP	V	R	
Event participant	[Ag]		p1	

        b. 他   哭湿   了   手帕
           tā   *kūshī*   *le*   *shǒupà*
           he   cry-wet   ASP   handkerchief
           'He cried the handkerchief wet'

	他	哭	湿	了	手帕
	tā	*kū*	*shī*	*le*	*shǒupà*
	he	cry	wet	ASP	handkerchief
Syntactic form	NP	V	R		NP
Event participant	Ag		p2		[W]

Huang notes that in the examples above, Agent is obligatory, while p1 (in 29a) and W and p2 (in 29b) are optional. Furthermore, Huang points out that selectional restrictions also take part in the linking: in (29b), the Ag participant for the event-frame of 哭 *kū* 'cry' must be human or, at least, animate, thus 手帕 *shǒupà* 'handkerchief' has no chance to get linked from Ag.

In (30) examples of resultative compounds with a transitive V₁ are given (Huang H.C. 2006:25).

---

[13] The semantic host is represented in square brackets.

(30) a. 他　洗干净　　　了　　衣服
        tā　*xǐgānjìng*　*le*　*yīfu*
        he　wash-clean　ASP　clothes
        'He washed the clothes clean'

	他	洗	干净	了	衣服
	tā	*xǐ*	*gānjìng*	*le*	*yīfu*
	he	wash	clean	ASP	clothes
Syntactic form	NP	V	R		NP
Event participant	Ag		p3		[Pt]

    b.　他　　　吃饱　　　了　　　　饭
        tā　　*chībǎo*　*le*　　　*fàn*
        he　　　eat-full　ASP　　　food
        'He ate himself full'

	他	吃	饱	了	饭
	tā	*chī*	*bǎo*	*le*	*fàn*
	he	eat	full	ASP	food
Syntactic form	NP	V	R		NP
Event participant	[Ag]		p1		Pt

Moreover, sentences like the one in (5), with an unselected object, are represented in (31)（Huang H.C. 2006:26）

(31)　他　踢破　　　了　鞋子
     tā　*tīpò*　　*le*　*xiézǐ*
     he　kick-break　ASP　shoe
     'He kicked his shoes broken'

	他	踢	破	了	鞋子
	tā	*tī*	*pò*	*le*	*xiézǐ*
	he	kick	break	ASP	shoe
Syntactic form	NP	V	R		NP
Event participant	Ag		p2		[W]

Huang H.C. (2006) observes that, in a resultative construction, the result is unpredictable and is the focus in terms of information structure; it has higher prominence than other parts of a sentence.

The example in (31) shows that the Pt role may not be realized in the surface, yet the sentence is grammatical. Huang H.C. (2006:26) stipulates that the event participant Pt of the main verb, with low discourse prominence, does not have to be obligatorily realized in a resultative construction[14]. This would enable us also to explain why intransitive resultatives can be formed from transitive V_1s as well, e.g. 他 吃饱了 *tā chībǎo le* 'he ate himself full'.

Furthermore, an unaccusative resultative would have the structure in (32) (Huang H.C. 2006:26):

(32)　张三　　　　醉倒　　　　了　　　　　　　（cf. 12a)
　　　Zhāngsān　zuìdào　le
　　　Zhangsan　drunk-fall　ASP
　　　'Zhangsan got drunk and fell'

	张三	醉	倒	了
	Zhāngsān	*zuì*	*dào*	*le*
	Zhangsan	drunk	fall	ASP
Syntactic form	NP	V	R	
Event participant	[Ag]		p1	

To account for causative constructions like the one presented in (12b), Huang H.C. (2006) proposes that it is the construction itself that contribute a Causer, which must be combined with the verbal event participant (cf. Goldberg 1995, Goldberg & Jackendoff 2004). In (33) the augmented schema is represented（Huang H.C. 2006:27)[15].

(33)　那　杯　酒　醉倒　　　了　　张三
　　　nà　bēi　jiǔ　zuìdào　le　Zhāngsān
　　　that　CL　wine　drunk-fall　ASP　Zhangsan
　　　'That glass of wine made Zhangsan drunk and fall'

---

[14] Goldberg (2005) discusses the omission of transitive verb objects under low discourse prominence: "[O]mission is possible when the patient argument is not *topical* (or *focal*) in the discourse, and the action is particularly *emphasized*" Goldberg (2005:29).

[15] The question marks indicate the absence of an event participant.

	那杯 酒		醉	倒	了	张三
	nà bēi jiǔ		*zuì*	*dào*	*le*	*Zhāngsān*
	That glass of wine		drunk	fall	ASP	Zhangsan
Syntactic form	NP		V	R		NP
Event participant	??			p1		[Ag]
Construction participants	CAUSER					

Huang H.C. (2006:28) further points out that the addition of a Causer role is not free, but is constrained; not all grammatical subjects receive the Causer role: a. The Causer participant is active only when the thematic prominence of NP_1 is lower than that of NP_2 (if any) in the event participant tier; b. the thematic prominence is in this order: Ag > Pt > W.

Furthermore, Huang H.C. (2006) points out that the 'inverted' causative construction contributes a kind of direct, non-agentive Causer to the grammatical subject position. A sentence that does not meet this requirement is ungrammatical, e.g. *李四醉倒了张三 *Lǐsì zuìdào le Zhāngsān* 'Lisi made Zhangsan drunk and fall'.

The constructionist approach proposed by Huang H.C. (2006) provides a novel analysis of resultative compounds and, above all, tries to solve a central question related to causative constructions like the one in (33), which are often left unexplained in other approaches, i.e. why causation by addition of an external argument is not always allowed. However, in some parts Huang's approach seems to be too much stipulative and it is not clear how the solution proposed can account for causative readings like that in (8d), where the Causer is agentive.

In the next section we will propose an analysis of Chinese resultative compounds based on Ramchand's (2008) 'first phase syntax'.

6.3 A 'first phase syntax' account of Chinese resultative compounds

Ramchand (2008) proposes an analysis of English resultative constructions based on what she calls 'first phase syntax', i.e. the syntax of the event decomposition. As we have seen in chapter 1, the syntactic decomposition she adopts is based on the assumption of a strict correlation holding between the semantic of the event structure and the morpho-syntax; in this framework, the projection of arguments, as we have seen, is based on the event structure. In what follows, we will first illustrate the analysis proposed by Ramchand (2008) for English resultative constructions and,

then, we will propose an analysis of Chinese resultative compounds based on this kind of approach.

6.3.1 Ramchand's (2008) analysis of English resultative construction with an AP

Ramchand (2008), following Wechsler (2001, 2005) divides English resultative constructions into 'Path' resultatives and 'result' resultatives[16].

As we have seen in 5.2.5, Wechsler (2005) points out that AP resultatives with a subcategorized argument in English generally involve gradable, closed-scale adjectives. These adjectives seem to manifest properties similar to Path PPs in the prepositional domain, e.g. *I walked to school*, or to the incremental theme object of consumption verbs, e.g. *I ate a sandwich* (cf. Kennedy & Levin 2002, Wechsler 2005, Ramchand 2008). All these elements have in common the fact that the affected theme argument changes by degrees along a scale that is homomorphic to the event. Furthermore, Paths have the property of being coexestensive with the event, i.e. the event begins and ends where the path begins and ends; if the scale has a definite bound endpoint, the event is telic (cf. Wechsler 2005). Given these assumptions, Wechsler (2005) proposes that, in the case of resultatives, the property scale is expressed by the resultative predicate. This leads to two predictions (Wechsler 2005:14):

a. When the resultative's predication subject is an argument of the verb (i.e. in a control resultative), homomorphism and coextension between property scale and event are required.
b. When the resultative's predication subject is not an argument of the verb (i.e. in an ECM resultative), homomorphism and coextension between property scale and event are *not* required.

Following Wechsler, and given the homomorphism requirement, Ramchand (2008) suggests that the AP of this kind of resultatives sits directly in the complement position of *proc*P (just like incremental themes or Path objects) and, thus, no intervening result is required: telicity arises because the AP is represented by a closed-scale adjective. See the representation in (34), from Ramchand (2008:122).

(34)   a. *I wiped the table clean.*

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[16] For the sake of simplicity we will not consider resultative with PPs, e.g. *Michael run Karena to the coconut tree*. In this case, the preposition *to* is considered to be the head of the *res*P. For the analysis of this kind of resultatives, see Ramchand (2008:110-121).

b.

```
                 initP
                /    \
               I      \
                     /  \
                   wipe  procP
                        /    \
                  the table   \
                             /    \
                        <wipe>     AP
                                   /\
                                  /__\
                                 clean
```
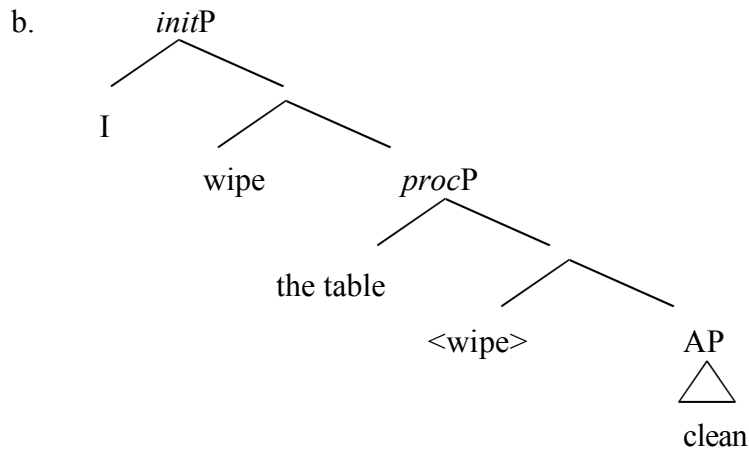
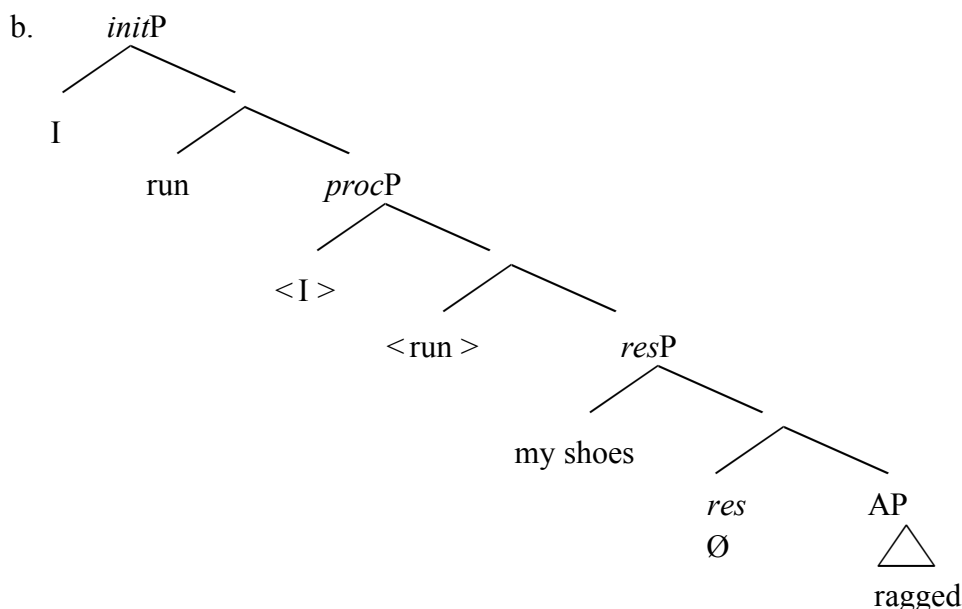However, the second prediction in Wechsler (2005) states that, when in the resultative construction the resultative's predication subject is not an argument of the verb, there does not seem to be homomorphism and coextension requirement between the property scale and the event, e.g. *I run my shoes ragged*. In this case, Ramchand (2008) suggests that the AP in question sits in the complement position of a result subevent projection, i.e. a full small clause mediated by the *res* head itself. According to this view, it is the semantics of the *res* head that creates the entailment of result; therefore, the scalar structure of the adjective is irrelevant; the only relevant property of the adjective is its ability to refer to a static property[17]. Ramchand observes that resultatives with unselected objects can be built up from verbs that are normally activities, thus the problem arises as to what identifies the *res*P projection head. Following Hale & Keyser (2000) and Baker (2003), Ramchand assumes that APs cannot independently license a specifier position; they are different from verbal items (cf. Baker 2003). Therefore, Ramchand suggests that the *res* head is necessary for two reasons: it must licence a specifier to host the resultee; it provides the 'leads-to' semantics that provides the result interpretation. APs themselves do not possess the features which allow them to identify the *res* subevent. For these reasons, Ramchand assumes that English possesses a null *res* head with a semantics of 'property possession', where the element in the *res*P specifier position comes to possess the

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[17] Ramchand (2008:124, fn. 8) points out that her analysis of resultatives with AP results, which is based on some structuring principle that constructs the 'result' or 'leads to' relation, is very close in spirit to Hoekstra's (1988, 1922) intuition. Hoekstra notes that APs could in principle express many different relationships to the event; therefore, something extra is needed to enforce the resultative interpretation in these cases. In Ramchand's analysis this is done by semantic composition rules that interpret embedded subevental descriptions as the 'leads-to' relation: in the *init* position, the state introduced by the *init* head is interpreted as causally implicating the process; in the *res* position, the state introduced by the *res* head is interpreted as being causally implicated by the process (cf. Ramchand 2008:44).

property expressed by the AP[18]. This kind of resultatives are termed 'result' resultatives by Ramchand. See the example in (35):

(35) a. *I run my shoes ragged*

b.
```
          initP
         /    \
        I      \
              /  \
            run   procP
                 /    \
              < I >    \
                      /    \
                  < run >   resP
                           /    \
                     my shoes    \
                               /     \
                             res      AP
                              Ø        △
                                     ragged
```

In (35), the null result head mediates the predicational relation between the AP and its subject (the element undergoing change of state), which is the resultee of the predication.

In the example in (35), the non-subcategorized object 'shoes' clearly is not the Undergoer of the action of running, but simply the Resultee. Ramchand (2008) observes that the object in question undergoes some process which results in the state of being 'ragged', but this is a matter of world knowledge. Ramchand stresses the fact that the structure ensures that the specifier of the process undergoes the process (lexically/enciclopedically) identified by the verb.

Furthermore, Ramchand (2008:126) assumes that the secondary predicate forming the resultative construction creates a complex predicational structure rather than an adjunct structure. The evidence which confirms this assumption is: 1) the object only becomes possible in the context of secondary predication; 2) it is interpreted as being

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[18] This way of augmentation by means of a secondary predicate, which describes a final-result property reached by an argument, does not come as a surprise since it is a phenomenon well studied in the literature (e.g. Hoekstra 1988, L&RH 1995, L&RH 1998 –'template augmentation'-, Pustejovsky 1991-'accomplishment formation')

both the 'subject' of the secondary predicate and the holder of the result state; and 3) it receives accusative case from the verb[19].

Ramchand further highlights that it is also possible to find a secondary predicate describing the result, where there does not seem to be any internal argument added, since the verb already licenses an argument in the Undergoer position (36). However, Ramchand still maintains that there is evidence of extra predicational structure, because the already existent object acquires new entailments due to the licensing and identification of a *res*P in the structure. The object in (36), then, is an Undergoer-Resultee, i.e. it is both the specifier of *proc*P and the specifier of the result projection described by the AP.

(36)   a. *I hammered the metal flat.* (cf. *I hammered the metal*)

b.   *init*P
      ╱╲
     I   ╱╲
       hammer *proc*P
             ╱╲
        the metal ╱╲
             <hammer> *res*P
                     ╱╲
                <the metal> ╱╲
                          res   AP
                           Ø   △
                                flat
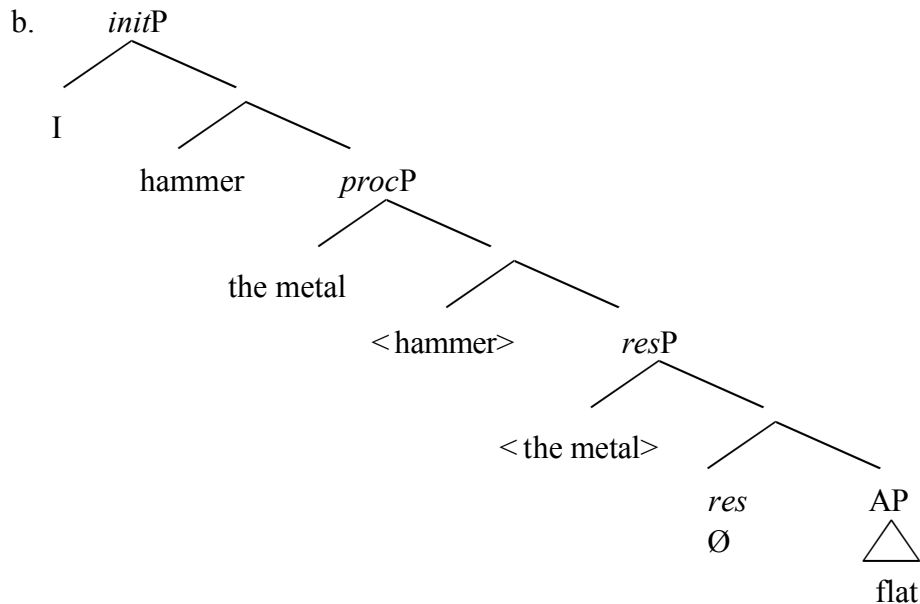
Moreover, a secondary predicational structure can be added to verbs that already specify a result by themselves. In this case the secondary predicate, as we have seen (cf. 5.2.1, 5.3.3.3), has the function of further specifying the final state described by *res* (according to Ramchand, in this case the secondary predicate must be non-gradable). See the example in (37), from Ramchand (2008:128).

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[19] The verb *run* does not license a separate argument in the Undergoer position because the Initiator and the Undergoer are coindexed for this verb in the normal case, thus no distinct direct object is possible (Ramchand 2008:126).

(37)   a. *John broke the box open.*

b.   *init*P
          /   \
      John   break   *proc*P
                      /   \
                  the box   <break>   *res*P
                                      /   \
                              <the box>   res   AP
                                              Ø   △
                                                        open
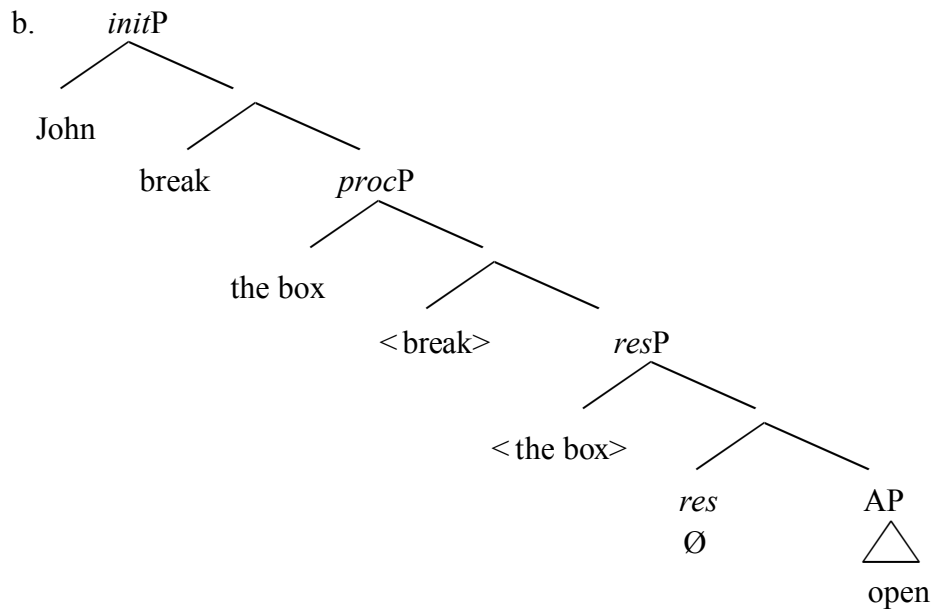
In addition, Ramchand (2008) proposes a further distinction among 'result' resultatives, on the basis of a difference found out by L&RH (1999) and RH&L (2001), i.e. that resultatives can either have a causative event structure formed by two temporally independent subevents or a simple event structure consisting of two temporally dependent subevents (cf. 5.2.3). Ramchand terms the two groups 'indirect' resultatives, e.g. *John sang himself hoarse*, and 'direct' resultatives, *e.g. John broke the bottle open*, respectively.

Ramchand (2008) observes that the eventive composition is mediated by causation; therefore there should be no requirement in terms of temporal sequence. She nevertheless finds out some coherence conditions (38):

(38)   a. *Init-proc coherence*
           Given a decomposition $e_1 \rightarrow (e_2 \rightarrow e_3)$, e_1 may temporally overlap e_2.
        b. *Proc-res coherence*
           Given a decomposition $e_1 \rightarrow (e_2 \rightarrow e_3)$, e_3 must *not* temporally overlap e_2
           (although they may share a transition point).
           (Ramchand 2008:130)

These conditions state that, since *init* leads to *proc* and *proc* is extended, *init* can preexist the process, coexist with the process or be a continuous initiation homomorphic with it. In contrast, the result state does not preexist the process, thus cannot overlap it. Nevertheless, if they are temporally dependent, they give rise to a transition point which links the end of the process with the beginning of the result

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state. These conditions enable Ramchand (2008) to link the event decomposition and the temporal dependence isolated by L&RH (1991) and RH&L (2001): "Temporal dependence is required for subevents identified by the same lexical content." (p.131). Consequently, in English the resultative constructions formed with a null *res* head would be 'indirect' resultatives, i.e. their subevents are temporally independent, while resultative constructions where the main verb already identifies *res* would be 'direct' resultatives, i.e. their subevents are temporally dependent. Moreover, resultatives formed with an AP in the complement position of *proc*P would also be 'direct' resultatives, since there is no *res* head and *proc* and AP are identified by homomorphic unit.

6.3.1.1 A discussion on Ramchand's (2008) analysis of resultative constructions

Ramchand's (2008) analysis of resultative constructions is quite appealing and has the advantage of being able to reconcile many different approaches previously proposed. For example, it is similar in spirit to other analyses based on the event structure (e.g. RH&L 1998, 2001; cf. Cheng & Huang 1994 for Chinese). Moreover, this analysis has much in common with Cheng's (1997) approach based on Hale & Keyser's l-syntax (1993), where thematic roles are identified with points (NP positions) in syntactic projections, i.e. Lexical Relation Structures, defined by the lexical entries of the verbs[20], even though here the decomposition is made in syntax and not in a separate level of syntax, i.e. l-syntax (vs. s-syntax). Moreover, Ramchand (2008) herself points out that her analysis of resultatives with result APs, which relies on the existence of some structuring principle that constructs the 'result' or 'leads-to' relation, is very close to Hoekstra's (1988, 1992) intuition that APs, in principle, could express different relationships to the event, thus something is needed in order to comply with the resultative interpretation (cf. fn. 17 above). In Ramchand's (2008) system the resultative interpretation is due to semantic composition rules that interpret embedded subeventual descriptions as the 'leads-to' relation (Ramchand 2008:124, fn. 8). Ramchand's (2008) approach is able to put together the small clause (e.g. Hoekstra 1988, 1992; cf. Sybesma 1999 for Chinese) and the complex predicate approach (e.g. Johnson 1991, Neeleman 1994; cf. Huang 1992 for Chinese). In fact, in

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[20] The argumet structure of a verb is not just a list of position hierarchically ordered as stipulated by the Thematic Hierarchy. These positions are placed in the l-syntax structure and are defined by the LCS of the verb.

the small clause approach the result predication is associated with additional predicational structure, which is responsible for the presence of the direct object, i.e. the subject of the small clause. However, at the same time, the first-phase decomposition represents a complex decomposed predicate, where the subevents are combined to form a single event, internally articulated (cf. Ramchand 2008:133).

We will try to propose an analysis of Chinese resultative compounds based on Ramchand's (2008) proposal. However, before analysing Chinese resultative compounds, some remarks are needed. First of all, we have seen that Ramchand (2008), following Wechsler's (2001, 2005) insights, proposes two different kinds of resultatives, i.e. Path resultatives and result resultatives. In Path resultatives, the AP would sit in the complement position of *proc* and telicity would arise because AP is closed scale (see the discussion in the previous section). However, Wechsler's (2005) homomorphism requirement is based on the observation that the APs involved in this kind of resultatives are all gradable, closed-scale adjectives. Nevertheless, we have seen (cf. 5.2.5), that Wechsler's (2005) explanation as to why resultatives formed with adjectives like *wet* or *dirty*, e.g. *I wiped the table dirty*, are ruled out is questionable: Wechsler claims that these adjectives are open-scale, and so they cannot provide a suitable telic bound. However, as we have seen, these adjectives apparently can be considered closed-scale as well (cf. Kearns 2007). Moreover, adjectives like *tired* too should be ruled out for transitive resultatives with a subcategorized object for the same reason, i.e. they are open-scale. However, we have seen that examples like *the soldier rode the horse tired* are apparently acceptable (cf. Krifka 2001). This distinction based on the kind of AP, thus, seems to have some weakness.

In our view, one possible way to distinguish the two kinds of resultatives proposed above is to focus on the verb, or better on the interaction between the verb and the AP, rather than on the AP by itself. In fact, we think that only those verbs that already have an implied result (implied fulfillment verbs in Talmy's (2000) terms, cf. 5.3.3.4) can be bounded by an AP Path, which confirms the attainment of the implied result: the homomorphism to the process of the event would be established via the scalar property of the AP[21]. Therefore, only certain kinds of verbs could create structures

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[21] This would be in parallel with transitive [init, proc] verbs with a Path object, where the property mapped onto the process is inherent to the DP and the homomorphism to the process of the event is established via the scalar structure of that inherent property; the process is defined by its progress through the scale contributed by the Path object and event boundedness arises from the boundedness in the material extent of the object (cf. Ramchand 2008 and chapter 1). Crucially, the presence of a Path

like the one shown in (34), i.e. verbs that imply a particular result. Consequently, path resultatives would be those with a verb which implies a result and an AP which confirms the attainment of that result, otherwise examples like that in (36) should be considered as Path resultatives as well, given the presence of a closed-scale AP (which is the prediction borne out by Wechsler 2005).

This difference seems to parallel that between 'strong' resultatives and 'weak' resultatives proposed by Washio (1997)[22]. In strong resultatives, the adjective has a completely independent semantic value from that of the verb (the lexical semantics of the verb and the lexical semantics of the adjective are completely independent), e.g. *I pounded the metal flat*, where the meaning of the verb *pound* does not entail that the object that is pounded results in a conventional state[23]. Weak resultatives, in contrast, involve adjectives whose meanings are closely related to the lexical semantics of the verb. The lexical semantics of the verb entails that the object of the verb results in a conventional state which is described by the weak resultative, e.g. *I polished the metal shiny*. This kind of resultatives, indeed, seems to correspond to Talmy's (2000) implied-fulfillment resultatives.

Therefore, it could be thought that in the case of weak resultatives, if the verb implies the attainment of a conventional state and the adjective is a closed-scale adjective expressing this conventional state, the AP functions as a Path providing a bound for the event, i.e. it is a Path resultative, giving rise to the structure in (39)[24]:

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object is specified in the lexical entry of the verb, which enables to distinguish verbs with an Undergoer object and verbs with a Path object.

[22] Washio (1997) also singles out another kind of resultatives, i.e.'pseudo' resultatives, e.g. *tie the shoelaces tight/loose.*

[23] It is unclear to us why Ramchand (2008) first proposes that resultatives like *Karena hammered the metal flat* are 'result' resultatives (cf. 36) (Ramchand 2008:127) but then puts them among 'path' resultatives (Ramchand 2008:129).

[24] From this point of view, adjectives like *wet* and *dirty* would not be allowed because they do not express the conventional state implied by the verb and not because they are open-scale adjectives, as Wechsler (2005) proposes.

(39)   a. *I washed the clothes clean.*

b.

```
              initP
             /    \
           I       \
                  /  \
               wash   procP
                     /    \
              the clothes  \
                          /  \
                      <wash>  AP
                              /\
                             /  \
                            clean
```
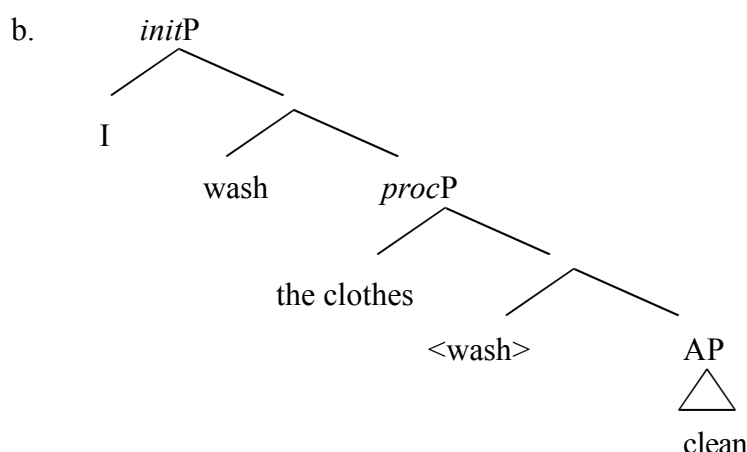
In all other cases, additional result predication would be required ('result' resultatives), including in those cases in which a subcategorized object is present, but the verb does not imply any particular result state and the AP expresses the new entailment acquired by the object, due to the licensing and identification of a *res*P in the structure (cf. ex. 36).

6.3.1.2 Other proposals: Son & Svenonius (2008) and Son (2008)

Following Ramchand's (2008) approach, Son & Svenonius (2008) and Son (2008) try to propose a unified account of resultative constructions in the world's languages. According to Son & Svenonius (2008) and Son (2008) the semantic structure of the clause is provided by a fine-grained functional structure (cf. Borer 2005, Ramchand 2008), which these authors take to be universal. In this system, each node in the functional structure must be licensed by the insertion of an appropriate vocabulary item ('Exhaustive Lexicalization' in Fábregas 2007)[25]. As far as the resultative construction is concerned, Son & Svenonius (2008) posit that the semantic representation for a typical resultative construction includes a notion of causation and of a state which is brought about. They illustrate this point with Jackendoff's (1990) Lexical Conceptual Structure (LCS), as it is shown in (40), from Jackendoff (1990:233):

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[25] Son & Svenonius (2008) stress the fact that a single vocabulary item or morpheme may 'span' more than one functional head, as we have seen in 1.4: a single lexical item can spell-out a sequence of heads. The term 'spanning' is from Williams (2003); the assumptions on spanning as an explanatory device are based in part on the 'nanosyntax' framework developed by Michal Starke in lectures in Tromsø.

(40) a. *The rooster crowed the children awake*

b.
$$\left[\begin{array}{l} \text{CAUSE } ([\alpha], [\text{INCH } [\text{BE } ([\beta], [\text{AT } [\text{AWAKE}]])]]) \\ \text{AFF}^{-} ([\text{ROOSTER}]^{\alpha} , [\text{CHILDREN}]^{\beta}) \\[1em] [\text{BY } \left[\begin{array}{l} \text{CROW } ([\gamma]) \\[0.5em] \text{AFF}^{-} ([\alpha]^{\gamma} , [\beta]) \end{array}\right]] \end{array}\right]$$
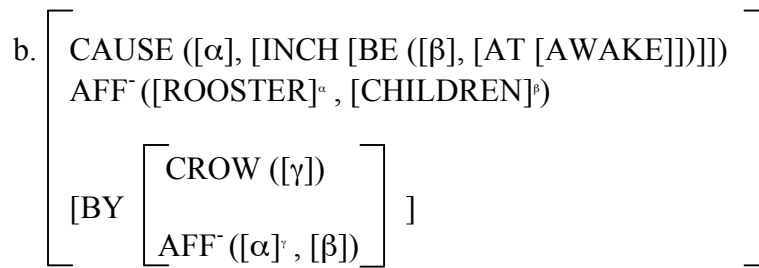
Son & Svenonius (2008), following Ramchand (2008), propose a syntactic decomposition of the event described in (40) as follows (adapted from Son & Svenonius 2008:393)[26]:

(41)
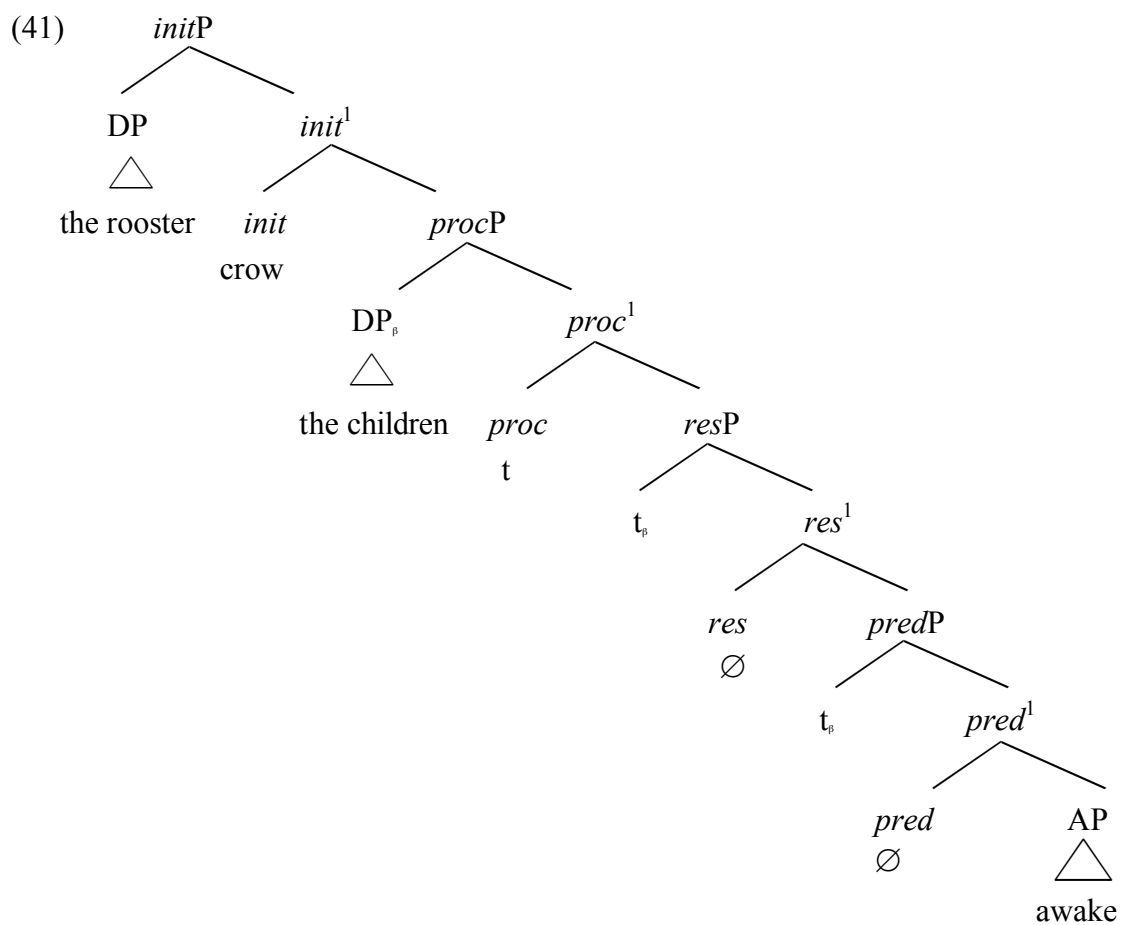
As it can be seen in (41), Son & Svenonius (2008) add a further functional head, i.e. *pred*, which is not represented in Ramchand (2008). Following Ramchand (2008),

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[26] Init[iation] corresponds to Jackendoff's CAUSE; Proc[ess] roughly conveys the meaning of Jackendoff's AFF[ECT]; Res[ult] and Pred[ication] together cover the same ground as Jackendoff's INCH[OATIVE], BE, and AT. Movement allows a single argument to occupy more than one position, represented by traces (in Jackendoff indicated by coindexation). Ramchand (2008), as we have seen, uses angle brackets to represent lexical items that Merge in more than one position (Remerge) (cf. 1.4).

they posit the existence in English of a language specific null morpheme (or morphemes), which lexicalize both *res* and *pred*, stressing the fact that this null lexical item is not default and must be acquired on the basis of positive evidence.

Son & Svenonius (2008:394) observe that cross-linguistically there are at least three different situations regarding resultatives: 1) the most restrictive type, in which manner verbs never combine directly with adjectives to form resultatives, e.g. Spanish, Hindi, Indonesian; 2) a less restrictive type, where adjectives can combine directly to form resultatives only with those verbs that already carry some implications of change of state, e.g. Japanese (42); 3) the least restrictive type, in which resultatives can be formed also from verbs that do not imply a change of state themselves, e.g. English (43), Korean (44), German.

(42)　　a. ジョンが　　テーブルを　きれいに　拭いた
　　　　　　John-ga　　teeburu-o　　kirei-ni　　fui-ta
　　　　　　John-NOM　　table- ACC　　clean-NI　　wipe-PAST
　　　　　　'John wiped the table clean.'
　　　　　　(Adapted from Son & Svenonius 2008:391)[27]
　　　　　b. *ジョンが　パン生地を　薄く　　　敲いた
　　　　　　　John-ga　　pankiji-o　　　usuku　　　tatai-ta.
　　　　　　John- NOM dough-ACC　　thin-KU　　pound-PAST
　　　　　　'John pounded the dough thin.'
　　　　　　(Adapted from Washio 1997:35)

(43)　　a. *Paul wiped the table clean.*
　　　　　b. *Mary pounded the metal flat.*

(44)　　a. 마리가　　　테이블을　　　깨끗하게　　　　　닦았다.
　　　　　　Mary-ka　　theyipul-ul　　kkakkusha-key　　takk-ass-ta
　　　　　　Mary- NOM table- ACC　　clean-KEY　　　wipe-PAST-DC
　　　　　　'Mary wiped the table clean.'
　　　　　b. 인호가　　　금속을　　　납작하게　　　　　두들겼다[28]
　　　　　　Inho-ka　　kumsok-ul　　napcakha-key　　twutulki-ess-ta
　　　　　　Inho- NOM　　metal- ACC　　flat - KEY　　　pound- PAST-DC
　　　　　　'Inho pounded the metal flat.'
　　　　　　(From Son 2008)

---

[27] We decided to uniform Japanese transcriptions to the Hepburn system throughout the text.

[28] The original form is 두들기 *twutulki-* 'pound' + 었 *ess* PAST + 다 *ta* DC, but the two syllables 기 *ki-* and 었 *ess* together are fused into one syllable, i.e. 겼 *ki-ess*. Therefore, 두들기었다 *twutulki-ess-ta* becomes 두들겼다 *twutul-kiess-ta*.
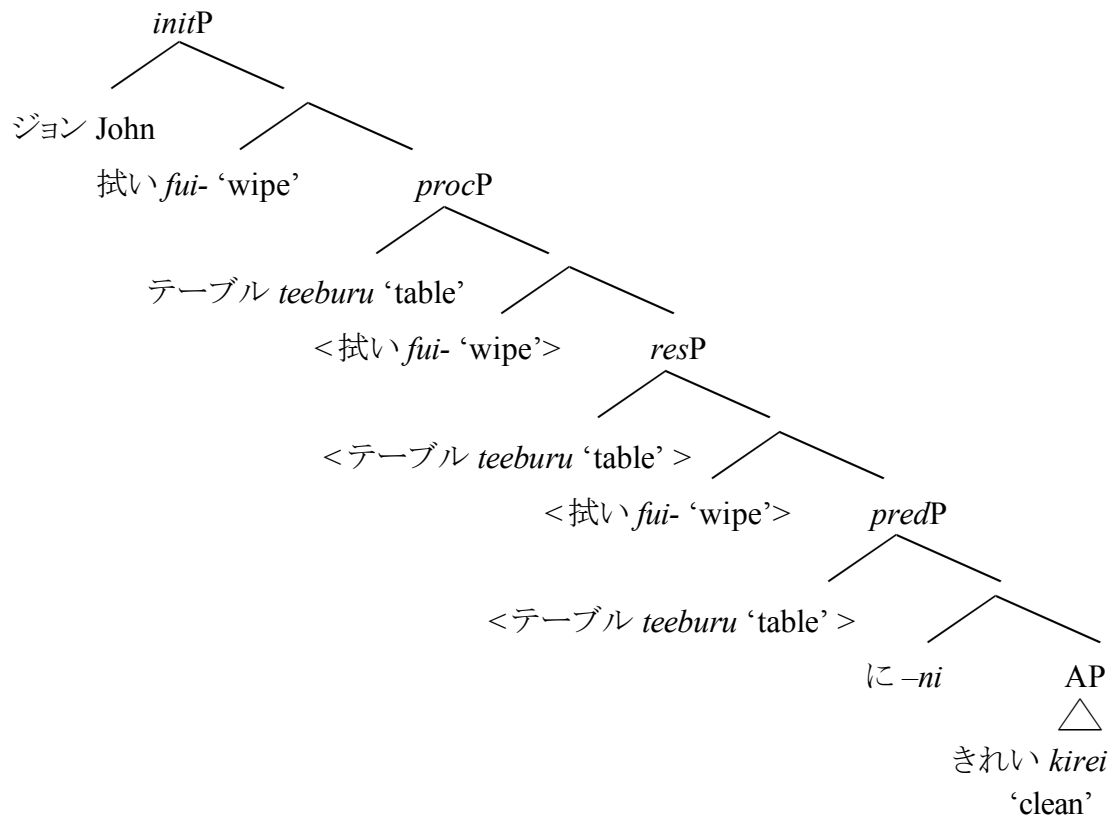
Son & Svenonius (2008) and Son (2008) suggests that the cross-linguistic variation in the kinds of resultatives allowed among languages depends on what lexical items languages possess to license the functional projection *res*, responsible for the result-state entailment (cf. Ramchand 2008), and *pred*, the uppermost predicative layer for the state (cf. 41 above). According to this view, a language like Spanish (most restrictive type) does not have lexical items able to identify *res* and *pred*, and thus does not allow verbs to combine directly with adjectives to form resultatives. In contrast, a language as Japanese (less restrictive type) would have a functional element that is able to lexicalize *pred* but not *res*, e.g. に -*ni* (cf. ex. 42)[29]. Therefore, Japanese allows only resultatives formed with verbs that can independently lexicalize *res* (i.e. weak resultatives): any verb that licenses *res* can be used in Japanese to create a resultative construction. A language like Korean (least restrictive type) would possess a functional element, i.e. 게-*key*[30], which lexicalizes both *res* and *pred* and thus can form strong resultatives (cf. example 42). Lastly, English (least restrictive type) has a null (phonologically empty) lexical item (cf. also Ramchand 2008, Son & Svenonius 2008) that lexicalizes *res*, and thus has strong resultatives. However, Son (2008), differently from Son & Svenonius (cf. ex. 41), assumes that in English *pred* is lexicalized by the adjective itself and not by the null lexical item that identifies *res*. The trees in (45) illustrate the structure of resultatives in these three languages[31].

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[29] Japanese has two different classes of adjectives, termed the い -*i* type and the な -*na* type, depending on the conjugation. Adjectives of the い -*i* type are adjectives that in the attributive use have an い -i ending, while adjectives of the な -*na* type have a な -*na* or だ -*da* ending in the attributive use. The endings に -*ni* (42a) and く -*ku* usually are used for the adverbial form, which specifies the verb, e.g. 早く走る *hayaku hashiru* 'run fastly' (Kubota 1989:45). However, sometimes these endings do not express the manner in which the action is performed but rather the resultant state of the action, e.g. 白く ぬる *shiroku nuru* 'paint white' (Kubota 1989:45).

[30] As in the case of Japanese に -*ni* and く –*ku* seen above (cf. fn. 29), Korean 게-*key* too is an adverbializer (cf. Sohn 1994:406-407). However, it can also occur in the secondary predicates in causative constructions (cf. Sohn 1994, Kim 2002, Kim 2007). Kim (2002) considers 게-*key* an aspectual marker rather than an adverbializer. Kim (2007) further notices that 게-*key* can denote a change of state even with some verbs that are not change-of-state verbs.

[31] We use representations with angle brackets like in Ramchand (2008).

(45)   a. Japanese (cf. 42a)

```
                initP
               /    \
      ジョン John    \
               拭い fui- 'wipe'    procP
                                  /    \
                 テーブル teeburu 'table'  \
                              <拾い fui- 'wipe'>    resP
                                                   /    \
                              <テーブル teeburu 'table' >  \
                                          <拾い fui- 'wipe'>    predP
                                                              /    \
                                    <テーブル teeburu 'table' >     \
                                                              に –ni    AP
                                                                        △
                                                                   きれい kirei
                                                                      'clean'
```

b. English (cf. 43b)

```
              initP
             /    \
      Mary        \
             pound    procP
                     /    \
           the metal      \
                    < pound >    resP
                                /    \
                   < the metal>      \
                                ∅    predP
                                    /    \
                         < the metal>    \
                                    flat    AP
                                             △
                                            flat
```

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c. Korean (44b)

*init*P
인호 Inho
두둘기 *twutulki-* 'pound' *proc*P
금속 *kumsok* 'metal'
<두둘기 *twutulki-* 'pound'> *res*P
<금속 *kumsok* 'metal'>
게-*key* *pred*P
<금속 *kumsok* 'metal'>
<게-*key*> AP
△
납작하 *napcakha*
'flat'
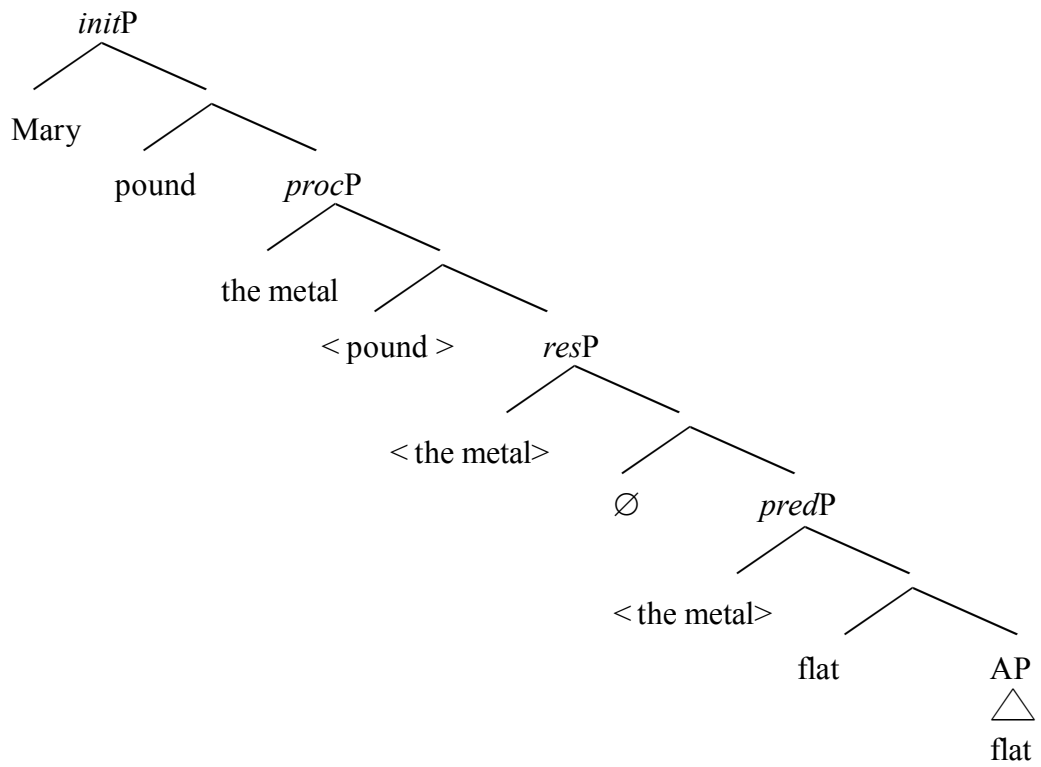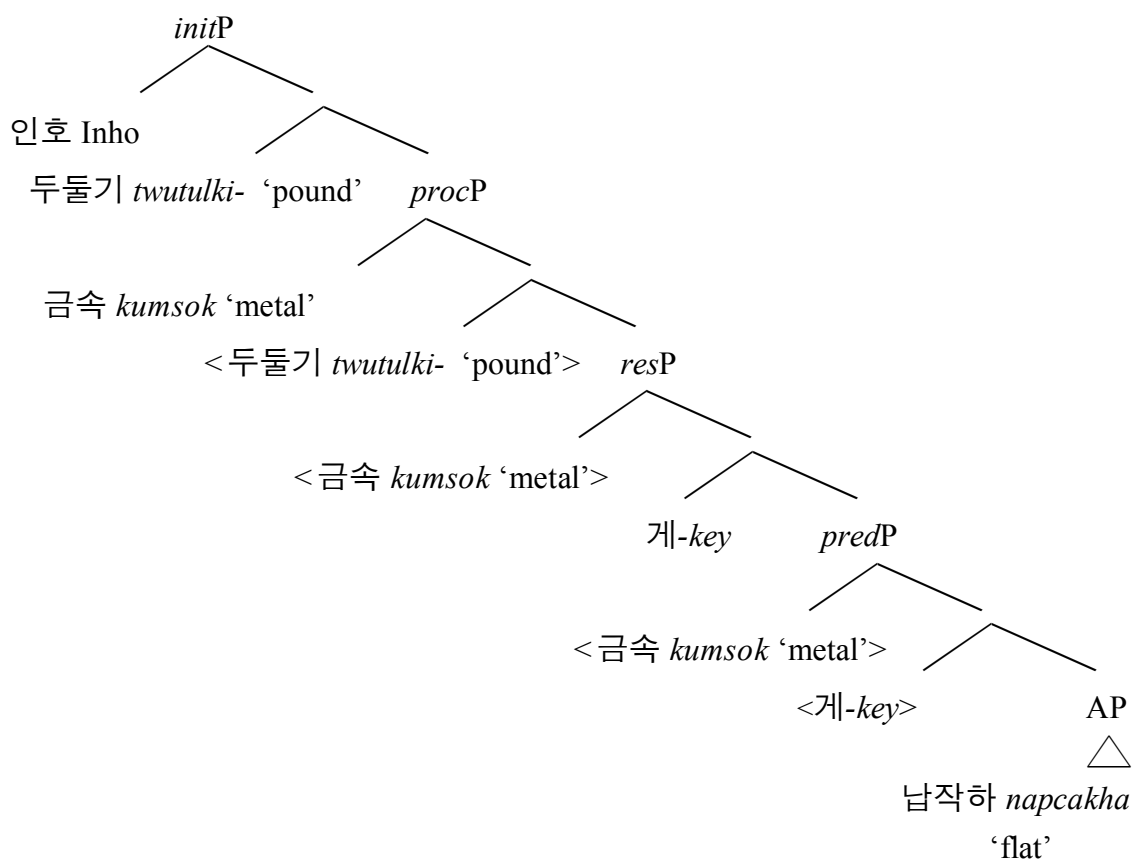
Therefore, different languages would differ in the kinds of resultatives allowed, on the basis of what lexical items are available to lexicalize *res* and/or *pred*.

6.3.2 A 'first phase syntax' analysis of Chinese resultative compounds

In this section we will provide an analysis of Chinese resultative compounds along the lines of the proposals discussed above (Ramchand 2008, Son & Svenonius 2008, Son 2008), in particular Ramchand (2008).

As we have seen, in Chinese resultative compounds are very productive, and this language allows strong resultatives. Moreover, Chinese allows resultative compounds where V_1 is a verb which implies a particular result, e.g. 洗 *xǐ* 'wash', but where V_2 contradicts the result implied by the verb as e.g. in 洗脏 *xǐzāng* 'wash-dirty', or even denotes a result subevent which has nothing to do with the subevent expressed by V_1, e.g. 洗破 *xǐpò* 'wash torn' (cf. 5.3.3.4). Furthermore, we have seen that, while English does not allow resultative constructions like **Phil rubbed the cloth dirty* (by rubbing things with it), Chinese does (see exx. 69 and 70, chapter 5): in these cases, even though the object seems to be the direct object of V_1, actually it is not, e.g. 他（洗

手）洗脏了水 *tā* (*xǐ shǒu*) *xǐzāng le shuǐ* 'he (wash hand) wash-dirty ASP water = he made the water dirty by washing his hands (he washed the water dirty by washing his hands)' (cf. 70b). This would entail the presence of an extra-predicational *res* structure that licenses the object, which is the specifier of the result projection, i.e. the Resultee, but not the Undergoer of V_1. Given these characteristics of Chinese resultative compounds, we assume that all resultative are built by the addition of extra predicational structure.
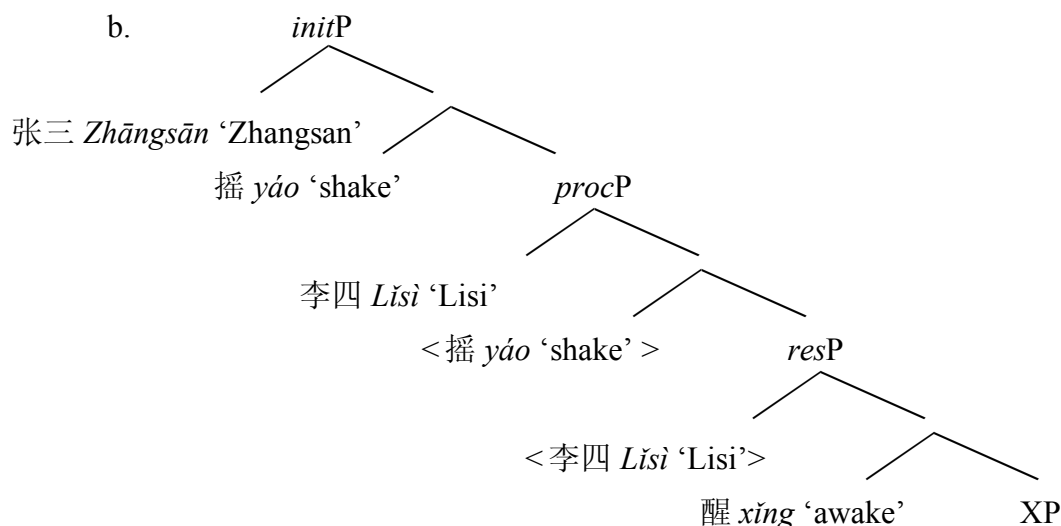
The first question to ask is what is the element that identifies *res* in Chinese. Since, as emerges from the examples, Chinese does not have any overt functional element appearing in a resultative compound, it could be thought that in Chinese, as well as in English, *res* is identified by a null lexical item, responsible for the resultative semantics. However, we have argued that the second constituent of a resultative compound should be regarded as a verb rather than as an adjective: the V_2s of resultative compounds are usually change of state verbs (either related to adjectives or not, e.g. 干 *gān* 'dry', 断 *duàn* 'break', 坏 *huài* 'ruin', 死 *sǐ* 'die'; cf. 5.3.3.3, 5.3.3.3.4). Furthermore, some stative verbs, usually denoting mental states, like 懂 *dǒng* 'understand' or 会 *huì* 'know' (cf. chapter 5, fn. 23), and unergative verbs (like 哭 *kū* 'cry' and 笑 *xiào* 'laugh') can be found as V_2s too (cf. chapter 5, table 1). We have then concluded that the second constituent of a resultative compound in Chinese is a verb rather than an adjective.

We propose that in Chinese it is V_2 itself that identifies *res*. Being a verb, the result complement can independently license a specifier position to host the Resultee; the resultative interpretation, in turn, would be due to the causal embedding: the semantic composition rules interpret embedded subevental descriptions as the 'leads-to' relation (see the discussion in 6.3.1.1 and fn.17). Therefore, we assume that there is no need to postulate the existence of a null *res* head in Chinese[32]; the V_2s in Chinese resultative compounds possess the features which enable them to independently identify the *res*P head, since they are verbal items capable of expressing change of

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[32] In the case of the syntactic resultative construction, it could be assumed that the morpheme 得 *de* identifies *res*, heading the resultative XP complement (cf. chapter 5, fn.14).

state[33]. The representation of a sentence like ex. (35) in chapter 5, repeated in (46a) for the sake of convenience, would be as in (46b).

(46) a. 张三　　　摇醒　　　了　　　李四。
      Zhāngsān　*yáoxǐng*　*le*　　*Lǐsì*
      Zhangsan　shake-awake　ASP　　Lisi
      'Zhangsan shook Lisi awake (Zhangsan shook Lisi and as a result Lisi awoke).'

b.

```
                              initP
                             /     \
        张三 Zhāngsān 'Zhangsan'     \
                        摇 yáo 'shake'  \
                                         procP
                                        /     \
                      李四 Lǐsì 'Lisi'         \
                             <摇 yáo 'shake'>    \
                                                 resP
                                                /    \
                            <李四 Lǐsì 'Lisi'>        \
                                        醒 xǐng 'awake'   XP
```
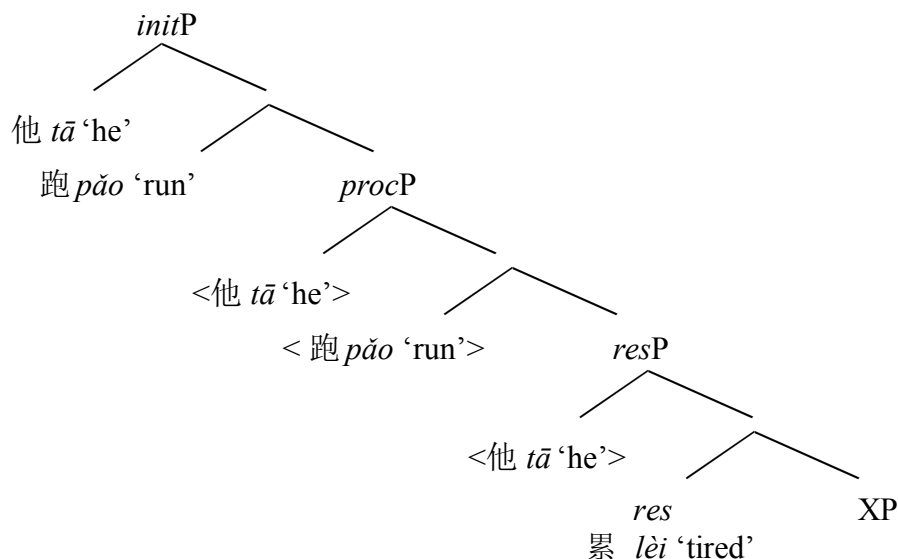
Adopting this approach, the eventive semantics of resultative compounds can be read directly from the syntactic structure, via the multiple causative embeddings. In what follows, we will propose an analysis of the different types of resultative compounds adopting Ramchand's (2008) framework.

6.3.2.1 Resultative compounds with an intransitive [init, proc] V$_1$

Resultative compounds formed with an intransitive [init, proc] (unergative) V$_1$, as we have seen in 5.3.1, can be either intransitive or transitive (with a non-subcategorized object). Intransitive [init, proc] V$_1$s license a composite Initiator-Undergoer role; thus, when they are used in the intransitive resultative pattern, the Initiator$_i$-Undergoer$_i$ happens to be the holder of the result state as well, i.e. the Resultee, as shown in the structure in (47).

---

[33] Note that Ramchand (2008:187) observes that the heads *init*, *proc* and *res* are uniformly linked by the general cause or 'leads-to' relation, but there can be differences, depending on how the content of the subevents is lexically described: different heads can have different lexical-encyclopedic content, i.e. different heads can be identified by different lexical items.

(47) a. 他　跑累　　　了　　(cf. chapter 5, ex. 40a)
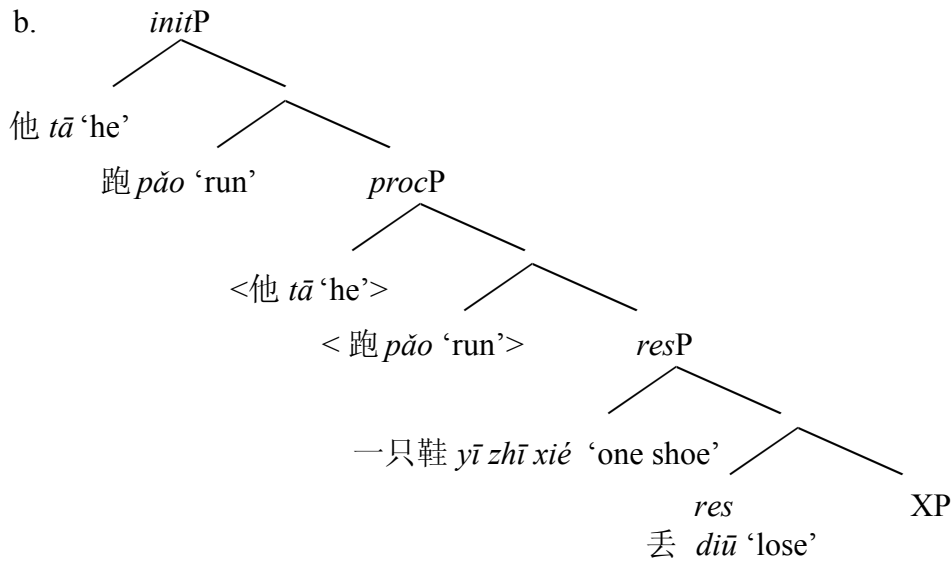　　　*tā　pǎolèi　　le*
　　　he　run-tired　ASP
　　　'He ran (himself) tired'

```
                initP
              /      \
      他 tā 'he'       \
            跑 pǎo 'run'    procP
                          /      \
                 <他 tā 'he'>      \
                      < 跑 pǎo 'run'>    resP
                                        /      \
                              <他 tā 'he'>      \
                                            res      XP
                                          累 lèi 'tired'
```

In this kind of resultative construction the result is clearly predicated of the subject[34].

Intransitive [init, proc] V$_1$s can also appear in the transitive resultative pattern with an unselected object, as shown in (48).

(48) a. 他　　　跑丢　　了　一　只　鞋。　　(cf. chapter 5, ex. 36a)
　　　tā　　　pǎodiū　le　yī　zhī　xié
　　　he　　　run-lose　ASP　one　CL　shoe
　　　'He run and as a result he lost one of his shoes.'

---

[34] The structure above shows that there does not seems to be anything that prevents the result to be predicated of the subject, which happens to be an Initiator$_i$-Undergoer$_i$-Resultee$_i$. Therefore, it remains to be explained why English, differently from Chinese, does not allow resultatives of the intransitive pattern based on unergative verbs (cf. 5.2.1 and 5.3.1).

b. *init*P

他 *tā* 'he'

跑 *pǎo* 'run'　　　*proc*P

<他 *tā* 'he'>

< 跑 *pǎo* 'run'>　　　*res*P

一只鞋 *yī zhī xié* 'one shoe'

res　　　XP
丢 *diū* 'lose'

In this kind of resultative construction the result is predicated of the object, i.e. the subject of the resultative small clause. The whole compound has the roles Initiator$_i$-Undergoer$_i$ and Resultee.
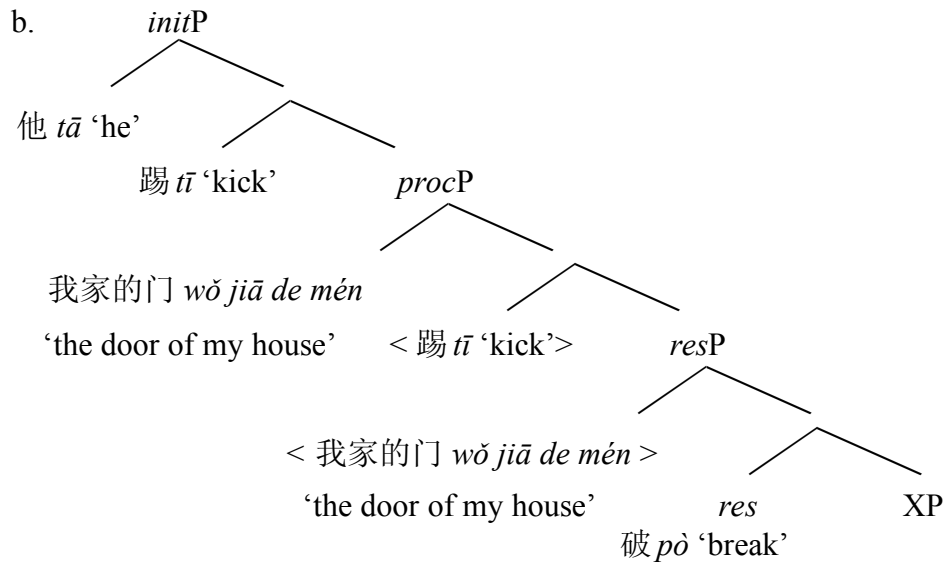
6.3.2.2 Resultative compounds with a transitive [init, proc] V$_1$

Transitive [init, proc] verbs, as we have seen in chapter 1, can be divided into those with an Undergoer object (Initiator, Undergoer) and those with a Path object (Initiator, Path)[35]. We think that this distinction is important to understand some of the differences found among resultative compounds based on transitive verbs.

If a resultative compound is transitive and V$_1$ is an [init, proc] verb licensing an Initiator and an Undergoer, its structure would be as in (49).

(49)　a. 他　　　踢破　　　了　我　家　的　门。
　　　　tā　　*tīpò*　　*le*　*wǒ*　*jiā*　*de*　*mén*
　　　　he　　kick-break　ASP　I　house　DE　door
　　　　'He kicked the door of my house broken (He kicked the door of my house and as a result the door broke).'
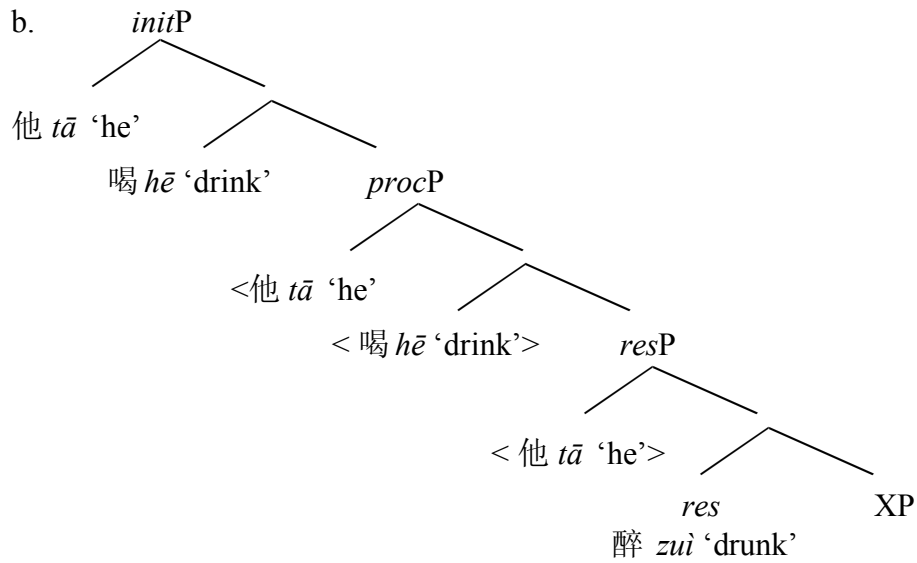
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[35] Recall that Undergoers (entity undergoing 'change' or process) are in the specifier position of *proc*P, while Paths sit in the complement position of *proc*P (the verbal change is directly mapped onto the material extent of the object). Ramchand (2008) assumes that in verbs with a Path object the Undergoer position in the specifier of *proc*P is not itself filled by the direct object DP and that the Initiator itself fills the Undergoer position too (Initiator-Undergoer), because of its status as continuous experiencer of the process (cf. 1.4.1.1.2).

b.

```
                    initP
                   /    \
        他 tā 'he'       \
                    踬 tī 'kick'    procP
                                  /    \
        我家的门 wǒ jiā de mén          \
        'the door of my house'   <踬 tī 'kick'>    resP
                                              /    \
                  < 我家的门 wǒ jiā de mén >         \
                  'the door of my house'   res       XP
                                        破 pò 'break'
```
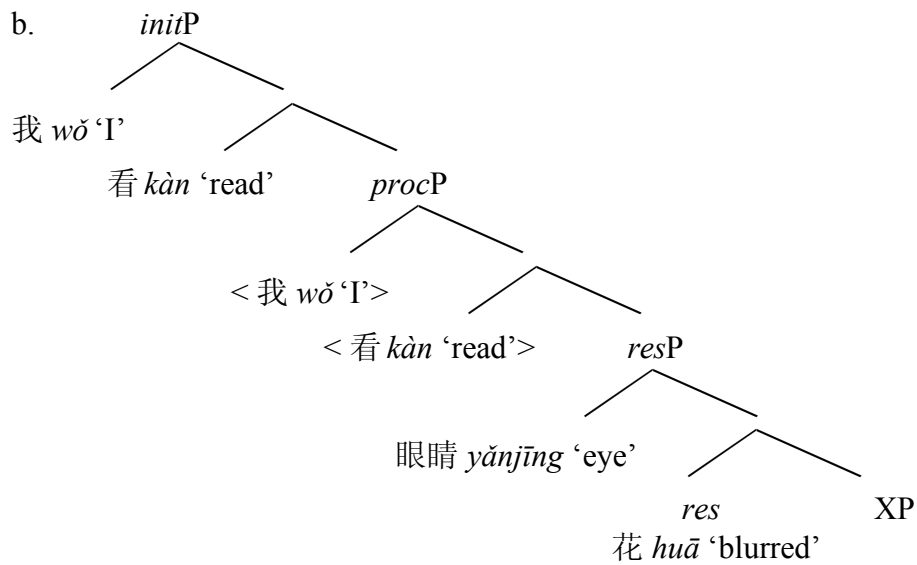
Since the object is subcategorized by the verb and is an Undergoer, the structure predicts that the result is predicated of the object, thus the Undergoer is the holder of the resultant state as well. The whole compound has as participant roles Initiator and Undegoer$_i$-Resultee$_i$.

In the case of resultative compounds with a transitive [init, proc] verb and a Path object, things are different. In fact, the Path object should be in the complement position of *proc*P (see 1.4.1.1.2), but this position is occupied by the added *res* projection. Moreover, as we have seen, Ramchand (2008) assumes that for these verbs the specifier position of *proc*P (Undergoer) is filled by the Initiator and, in fact, these kinds of verbs in English can usually be used intransitively (e.g. *I like to eat*; *he is eating*). Therefore, the Path object of V$_1$, in principle, should not appear in the resultative compound. More often than not, indeed, resultative compounds formed with this kind of V$_1$s are either intransitive (50) or transitive with an unselected object (51).

(50)　　a. 他　　喝醉　　　了。
　　　　　tā　　hēzuì　　le
　　　　　he　　drink-drunk ASP
　　　　　'He drank himself drunk.'

b.

```
              initP
             /    \
   他 tā 'he'      \
           喝 hē 'drink'   procP
                          /    \
              <他 tā 'he'       \
                      < 喝 hē 'drink'>   resP
                                        /    \
                          < 他 tā 'he'>      \
                                         res    XP
                                      醉 zuì 'drunk'
```

(51)　a. 我　看花　　　　了　　眼睛。　　　(cf. chapter 5, ex. 38b)
　　　　 wǒ　*kànhuā*　　*le*　　*yǎnjīng*
　　　　 I　　read-blurred　ASP　　eye
　　　　 'I read my eyes blurred.'

b.

```
              initP
             /    \
   我 wǒ 'I'       \
           看 kàn 'read'   procP
                          /    \
              <我 wǒ 'I'>       \
                      < 看 kàn 'read'>   resP
                                        /    \
                       眼睛 yǎnjīng 'eye'     \
                                         res    XP
                                      花 huā 'blurred'
```

From the examples above, what emerges is that, in intransitive resultative compounds formed with a transitive V_1 with a Path object (50), the result is predicated of the subject. The whole compound has a single role, Initiator$_i$-Undegoer$_i$-Resultee$_i$: the Initiator$_i$-Undegoer$_i$ of V_1 is the holder of the result state as well. In contrast, when this kind of V_1s appears in the transitive pattern with an unselected object (51), the whole compound has the roles Initiator$_i$-Undegoer$_i$ and Resultee; the result is predicated of the object. Since in these transitive verbs the Undergoer is supposed to

coincide with the Initiator, it does not come as a surprise that, when they occur as V₁s in a resultative compound, they behave similarly to intransitive [init, proc] verbs.

However, things are slightly more complicated. In fact, we have considered instances of transitive resultative compounds where the Path object apparently can occur in the object position and the result is predicated of the subject (chapter 5, ex. 41). We have observed that such cases have many restrictions; in principle, only non-referential or dummy objects can appear (cf. 5.3.1), whereas fully referential Paths are excluded (cf. chapter 5, ex. 42). Apparently, the more the object is generic, the more it is acceptable; in contrast, more specific objects are referential and are generally judged unacceptable. I asked my informants to judge transitive resultatives formed with this kind of V₁s taking different kind of objects; in (52) their judgements are shown.

(52)   a. 老王　　喝醉　　　了 *那 瓶　酒 / *一 杯 酒 / ??? 啤酒
        Lǎo Wáng hēzuì　　*le*　*nà píng jiǔ*　*yī bēi jiǔ*　　*píjiǔ*
        Lao Wang drink-drunk ASP that CL　wine　one CL wine　beer
        'Lao Wang drank *that bottle of wine / *one glass of wine / ???beer drunk'

    b. 小李　　吃饱　了 *半　斤 饭　　/ ??? 米饭 / *稀饭
        Xiǎo Lǐ chībǎo le　bàn jīn fàn　　　*mǐfàn*　　*xīfàn*
        Xiao Li eat-full ASP half CL rice　　　　rice　　porridge
        ??? 肉　／ * 牛肉 / *蛋糕　／ *两　碗　米饭
        　ròu　　*niúròu　dàngāo　liǎng wǎn mǐfàn*
        　meat　beef　cake　　two　CL　rice
        'Xiao Li ate-full *half jin (unit of measure) of rice / ???rice / *porridge / ???meat / *beef / *cake / *two bowls of rice'

    c. *他　　写累　　　了　　论文
        tā　　*xiělèi*　　*le*　　*lùnwén*
        he　　write-tired　ASP　thesis
        'He wrote-tired thesis'

    d. *我　　看累　　　了　　书
        wǒ　　*kànlèi*　　*le*　　*shū*
        I　　read-tired　ASP　book
        'I read-tired the book (I read (the book) and as a result I got tired)'

Note, however, that sometimes there is variability in judgement. For example, Huang (2005) judges as acceptable a sentence like 我看累了报纸 *wǒ kànlèi le bàozhǐ* 'I read the newspaper and as a result I got tired'; Li (2008:741) judges as acceptable a sentence like (52d). It could be thought that the difference in judgement depends on the degree of referentiality attributed to the object by the speaker. However, this hypothesis seems to be contradicted by data like those in (53):
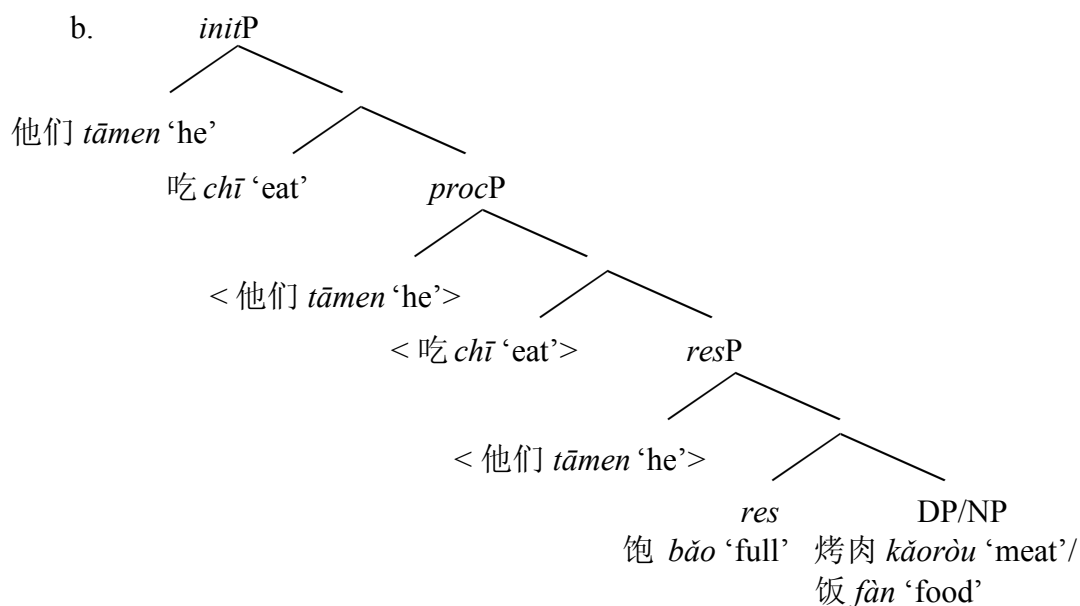
360

(53) a. 罗盘　　吃饱　了　烤　糯米　　　粑粑
　　　 Luó Pán chībǎo le kǎo nuòmǐ bābā
　　　 Luo Pan eat-full ASP roast glutinous rice cake
　　　 'Luo Pan ate himself full of roasted glutinous rice cake (Luo Pan ate the roasted glutinous rice cake and as a result got full)'
　　　 (From the PKU corpus)

　　b. 飞鸟　　都　吃饱　了　他们　的　肉
　　　 fēidiǎo dōu chībǎo le tāmen de ròu
　　　 bird all eat-full ASP they DE meat
　　　 'The birds ate themselves full of their meat (The birds ate their meat and as a result got full)'
　　　 (From the PKU corpus)

　　c. 他们 [...] 吃饱　　了　烤肉
　　　 tāmen chībǎo le kǎoròu
　　　 they eat-full ASP roast meat
　　　 'They ate themselves full of roast meat (They ate the roast meat and as a result got full)'
　　　 (From the PKU corpus)

　　d. 我　吃饱　　了　土豆
　　　 wǒ chībǎo le tǔdòu
　　　 I eat-full ASP potato
　　　 'I ate myself full of potatoes (I ate potatoes and as a result got full)'
　　　 (Adapted from Sybesma 1999:35)

　　e. John　　吃 厌　了　章鱼
　　　 John chīyàn le zhāngyú
　　　 John eat-bored ASP octopus
　　　 'John ate himself bored with the octopus (John ate the octopus and as a result got bored)'
　　　 (Adapted from Shibagaki 2009)

The data in (52) and (53) are quite puzzling and it does not seem possible to find a generalization on what kind of objects are admitted in this type of resultatives. It could be thought that the objects in (53), which normally are Path objects of V$_1$ and are in the complement position of *proc*P (cf. 1.4.1.1.2), when appear in resultative compounds like those in (53) fill the complement position of *res*P. These objects can be interpreted as rhematic objects, which further specify the result state, similarly to English examples like *I ate myself full of fries* or *I stuffed myself full with food*[36], as highlighted by the translations given in (53). Actually, Sybesma (1999:55) points out

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[36] Note that this kind of complements in Chinese are usually expressed as NPs/DPs, e.g.: 他们的购物车装满了东西 *tāmen de gòuwù chē zhuāngmǎn le dōngxi* 'they DE shopping cart stuff/fill ASP thing = Their shopping carts are stuffed with things'; 容器装满了液体 *róngqì zhuāngmǎn le yètǐ* 'container stuff/filled ASP liquid = The container is filled with liquid' (examples from the Nciku dictionary: http://www.nciku.com/search/all/examples/%E8%A3%85%E6%BB%A1?pageNo=2).

that, in examples like those in (53), the object seems to further specify what one is full of[37]. Therefore, we assume that the structure of these resultatives is the one in (54b).

(54) a. 他们　　　吃饱　　　了　　烤肉 /　　　饭
　　　tāmen　　*chībǎo*　*le*　*kǎoròu*　　*fàn*
　　　they　　　eat-full　ASP　roast meat　food
　　　'They ate themselves full of roast meat/of food'

b.

```
                    initP
                   /    \
         他们 tāmen 'he'    \
                    吃 chī 'eat'    procP
                              /    \
                  < 他们 tāmen 'he' >   \
                          < 吃 chī 'eat' >    resP
                                        /    \
                            < 他们 tāmen 'he' >   \
                                            res        DP/NP
                                        饱 bǎo 'full'   烤肉 kǎoròu 'meat'/
                                                        饭 fàn 'food'
```

However, it still remains to be explained why, generally, native speakers tend to accept more easily (relatively) generic objects rather than (relatively) specific objects, when combined with those resultative compounds. The more generic objects can be considered as dummy objects, which, as we have seen, are required when transitive verbs are used in the intransitive/unspecified object reading, e.g. 吃饭 *chīfàn* 'eat-rice/food = eat'; if 吃 *chī* 'eat' is used without the dummy object, then it has a definite object interpretation (*pro*), e.g. 我吃了 *wǒ chī le* 'I ate it' (cf. 1.4.1.1.2 and 1.4.1.2). Therefore, it could be the case that dummy objects in this kind of resultative compounds have a function similar to the one they have when used with V₁s like 吃 *chī* 'eat' in the intransitive/unspecified object reading; if this were the case, their function would be different from rhematic objects in the complement position of *res*P like those in (54), which are often perceived as less natural. We have assumed that

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[37] Sybesma (1999:56) also points out that fullnes is specified by some mass (cf. *the wardrobe is full of two jackets*), thus examples like *我吃饱了（那）两顿饭 *wǒ chībǎo le* (*nà*) *liǎng dùn fàn* 'I eat-full asp two CL food = I am full of (those) two meals' are ungrammatical. This explains the ungrammaticality of sentences with some of the objects in (52).
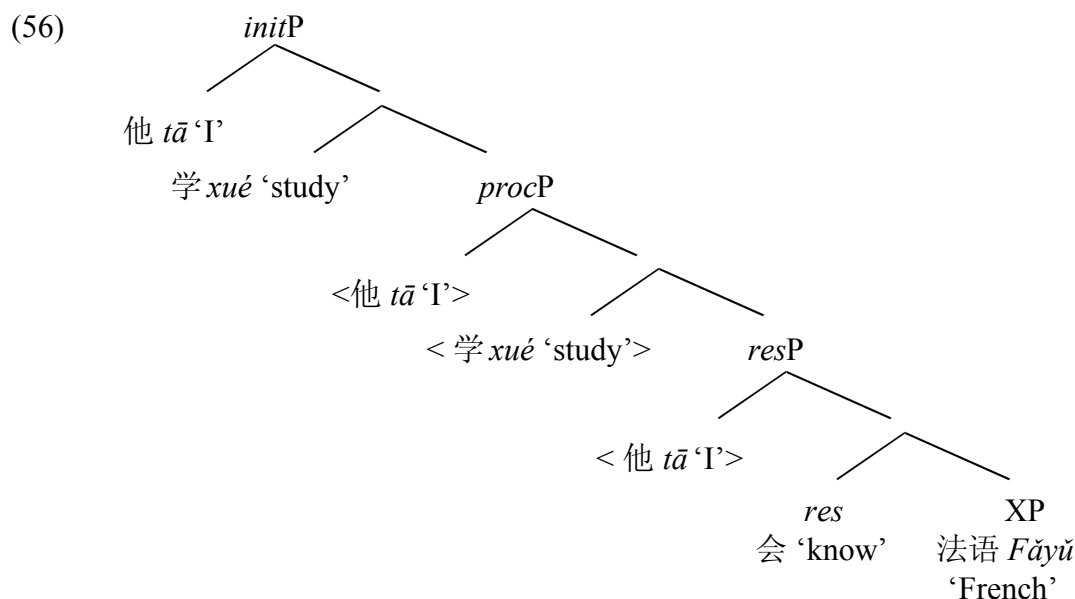
these dummy objects, as the normal Path objects, are rhematic material in the complement position of *proc* (cf. 1.4.1.2), which in resultative compounds is occupied by the *res* subevent; in such case we assume that dummy objects can sit in the complement position of *res*, maintaining the structure in (53b). In the absence of clearer data and given the contrasting judgements, it is difficult to make strong hypotheses on what kind of objects can appear in resultatives as those in (52) and (53) and on what their exact function is.

Apparently, resultative compounds where V_1 is a transitive verb with a Path object can be predicated of the object only when a postverbal non-subcategorized object is present (51), just like resultatives formed with intransitive [init, proc] V_1s. However, we will see later on that this is not always the case.

Other interesting cases are those represented by the examples in (55):

(55)   a. 他 学会 了 法语。
         tā xuéhuì le Fǎyǔ
         he study-know ASP French
         'He learned French (He studied French and as a result he knows it).'
      b. 我 听懂 了 你 的 话。
         wǒ tīngdǒng le nǐ de huà
         I listen-understand ASP you ASP word
         'I understood your words (I listened to your words and I understood them).'

The V_1s in (55) do not take as object an Undergoer, but a Path; these verbs are treated on a par with those with a Path object just considered above (e.g. 吃 *chī* 'eat'). The compound has an object, which is both the argument of V_1 and of V_2, since V_2 is a transitive stative verb, which can take an object in its complement position (e.g. 他 会法语 *tā huì Fǎyǔ* 'he know French = he knows French). Therefore, the postverbal NP of the resultative compound would be in the complement position of V_2 (56) and the structure correctly predicts that the result is predicated of the subject.

(56)

```
                    initP
                   /    \
          他 tā 'I'       \
              学 xué 'study'   procP
                            /      \
                  <他 tā 'I'>        \
                      <学 xué 'study'>  resP
                                      /    \
                            <他 tā 'I'>     \
                                        /    \
                                      res     XP
                                   会 'know'  法语 Fǎyǔ
                                              'French'
```

From the cases considered above, it should be concluded that in resultative compounds with a transitive V_1 and a Path object the result is always predicated of the subject, unless an unselected object is present (cf. ex. 51). However, consider the example in (57).

(57) 他   喝干   了   杯   中   的   酒。
      tā   *hēgān*   *le*   *bēi*   *zhōng* *de* *jiǔ*
      he   drink-dry ASP   glass middle DE   wine
      'He drank the wine inside the glass dry'

In the example in (57), the postverbal NP seems to be the (Path) argument of V_1 and the result is predicated of the object. Therefore, the kind of V_2 seems to matter too. In the example in (57), V_2 干 *gān* 'dry' cannot be predicated of a [+human] subject, and thus the result can in no way be predicated of the subject; selectional restrictions seem to have a role here[38].

In principle, nothing prevents the Path object of V_1 to appear in the *res*P specifier position. Therefore, apparently only selectional restrictions prevent compounds like 吃饱 *chībǎo* 'eat-full' or 喝醉 *hēzuì* 'drink-drunk' from having their result predicated of the Path object, since both V_2s require to be predicated of a [+human] or at least [+ animate] entity, but the Path of these V_1s cannot be [+ animate], thus it cannot appear

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[38] Li (2000) divides resultatives into two groups: those where the result can be predicate only of the object, e.g. 喝光 *hēguāng* 'drink-empty', 煮糊 *zhǔhū* 'cook-mushy' and 骑坏 *qíhuài* 'ride-broken', which cannot be used intransitively; those where the result can be predicated either of the subject or of the object, e.g. 说烦 *shuōfán* 'say-bored', 踢痛 *tītòng* 'kick-ache', 骑累 *qílèi* 'ride-tired'), which can be used intransitively.

in the specifier position of *res*P. The sentence in (57), then, should have the structure in (58).

(58)
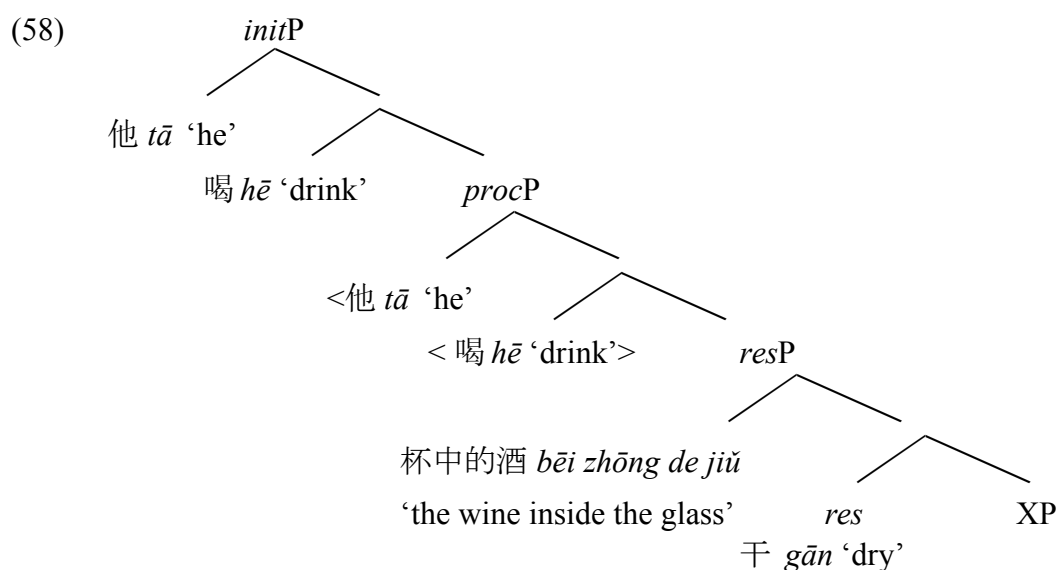
Summing up, we can conclude that in the intransitive resultative pattern, where V$_1$ is a transitive verb with a Path object, the result is predicated of the subject. In the transitive pattern, the result can be predicated either of the object (a selected or an unselected one) or of the subject. The result is predicated of the subject when the postverbal NP is not a Resultee (it is either a non-referential object or an object that does not satisfy the selectional restrictions imposed by V$_2$, i.e. the result cannot be predicated of that kind of object) and V$_2$ is a transitive stative verb, as in (55), where the postverbal NP is both the object of V$_1$ and of V$_2$ and sits in the complement position of V$_2$.

Problems arise also with transitive resultative compounds where V$_1$ is a transitive [init, proc] verb with an Undergoer object. First of all, compounds like 骑累 *qílèi* 'ride-tired' or 踢痛 *tītòng* 'kick-hurt' can appear without an object, i.e. they can be used in the intransitive resultative pattern (59), in which case the result is predicated of the subject.

(59)   a.我   骑累   了。
       wǒ   *qílèi*   *le*
       I   ride-tired   ASP
       'I rode myself tired.'

b. 张三　　　踢痛　　　了
Zhāngsān　tītòng　　le
Zhangsan　kick-hurt　ASP
'Zhangsan got hurt from kicking'
(From Li 2000:16)

Li (2000:16) observes that in this kind of sentences the focus is on he/she being tired/hurt as a result of a particular action, no matter whom/what the initiator of the event rides or kicks. Apparently, for this kind of verbs the argument can be optionally expressed, it is not obligatory, and thus the transitivity alternation manifests itself in the presence or absence of an internal argument[39].

Therefore, it could be supposed that in a resultative compound where V_1 is a transitive verb with an Undergoer object, V_1 can leave its Undergoer object unexpressed; in these cases, the specifier position of *proc*P is left unfilled (cf. also 1.4.1.3, ex. 50a)[40]; thus the result is free to be predicated of the subject. However, resultative compounds where V_1 is a transitive verb with an Undergoer object cannot freely occur in the intransitive pattern; other requirements should be met. In fact, the kind of V_2 is important as well: V_2 must be able to be predicated of the subject, as in the examples in (60), e.g. 张三累了 *Zhāngsān lèi le* 'Zhangsan got tired'. If V_2 cannot be predicated of the subject, then the compound verb cannot be used intransitively, as shown by the example (60a):

(60)　a. *我 踢破　　　了　　cf.　b. 我　　踢破　　　了　　门
　　　　　wǒ tīpò　　*le*　　　　　　*wǒ*　　*tīpò*　　*le*　　*mén*
　　　　　I　kick-break　ASP　　　　　I　　kick-break　ASP　door
　　　　　'I kicked myself broken'　　　　'I kicked the door broken'

---

[39] Goldberg (2005) discusses the omission of transitive verb objects under low discourse prominence (cf. fn.14):
　　a. *The chef-in-training chopped and diced all afternoon.*
　　b. *Tigers only kill at night.*
[40] The alternative would be to assume that, when these verbs are used intransitively, the Initiator happens to be the Undergoer as well, as in the case of verbs with a Path object, like *eat* (cf. 1.4.1.1.2). However, in this case the semantics does not seem consistent with the Initiator being the Undergoer. According to us, evidence in favour of the unfilled Undergoer position is given by resultative compounds with a non-subcategorized object, like those presented in chapter 5, examples (69) and (70), e.g. 小王洗湿了鞋 *Xiǎo Wáng xǐshī le xié* 'Xiao Wang wash-wet ASP shoe = Xiao Wang washed the shoes wet', where the meaning is that Xiao Wang washed something and as a result he got his shoes wet; here 'shoes' is not the Undergoer of V_1, and the thing which is washed (the Undergoer) remains unexpressed. We will discuss these examples later on in this section.

c. 张三　　　　踢痛　　　　了
　　Zhāngsān　*tītòng*　　　*le*
　　Zhangsan　kick-hurt　　ASP
　　'Zhangsan got hurt from kicking'
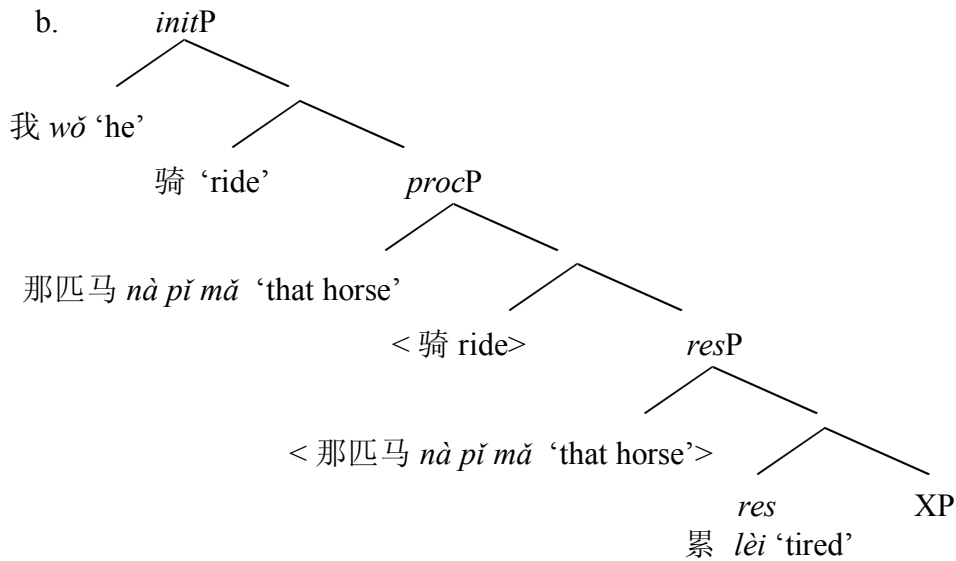　　(From Li 2000:16, cf. 59b)

Since the V$_2$ in (60a), 破 *pò* 'break', cannot be predicated of the subject of 踢 *tī* 'kick' ([+animate]), because it can be only predicated of a [-animate] entity, the absence of the object makes the sentence incomplete and, thus, ungrammatical (see the contrast with 60c).

When the predication requirements on V$_2$ are met, the Undergoer position can be filled or not. If an object (the Undergoer) occurs overtly, then we have a transitive pattern resultative with an Initiator and an Undergoer$_i$-Resultee$_i$. In contrast, if the object does not occur overtly, then the Initiator happens to be the holder of the result state as well. See the structure in (61), representing (59a):

(61)
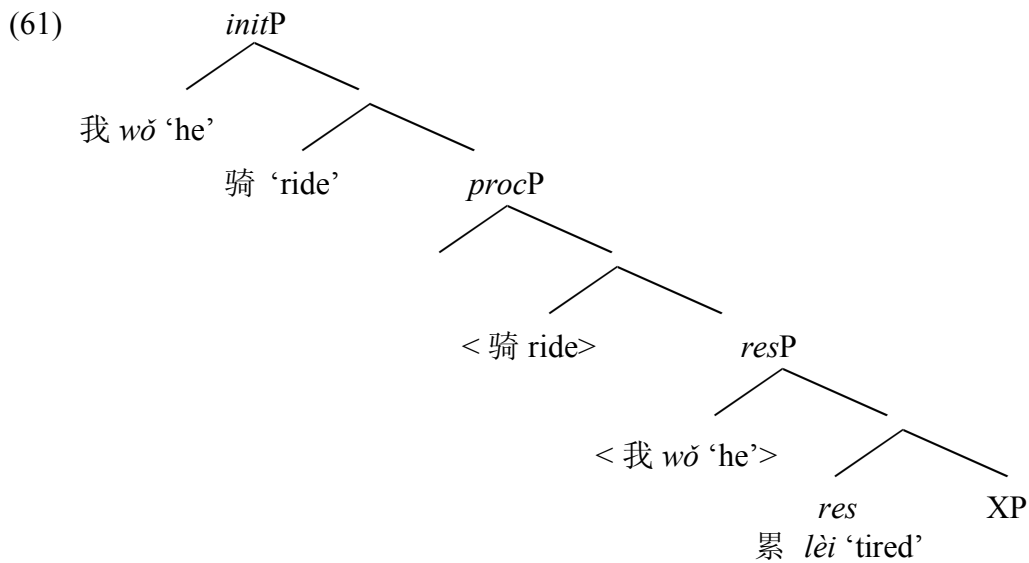
In contrast, if the Undergoer is expressed, then it occupies the Undergoer position and subject predication is ruled out, as we have seen above (cf. ex. 13b). See the example in (62).

(62)　a.我　　　　骑累　　　了　　那　　匹　　马。
　　　　wǒ　　　*qílèi*　　*le*　　*nà*　　*pǐ*　　*mǎ*
　　　　I　　　　ride-tired　ASP　that　CL　horse
　　　　'I rode that horse tired'

b.

initP
├── 我 *wǒ* 'he'
└──
    ├── 骑 'ride'
    └── procP
        ├── 那匹马 *nà pǐ mǎ* 'that horse'
        └──
            ├── <骑 ride>
            └── resP
                ├── <那匹马 *nà pǐ mǎ* 'that horse'>
                └──
                    ├── res
                    │   累 *lèi* 'tired'
                    └── XP

Given the structure in (62) and the discussion above, the ungrammaticality of a sentence like the one in (63) is well explained.
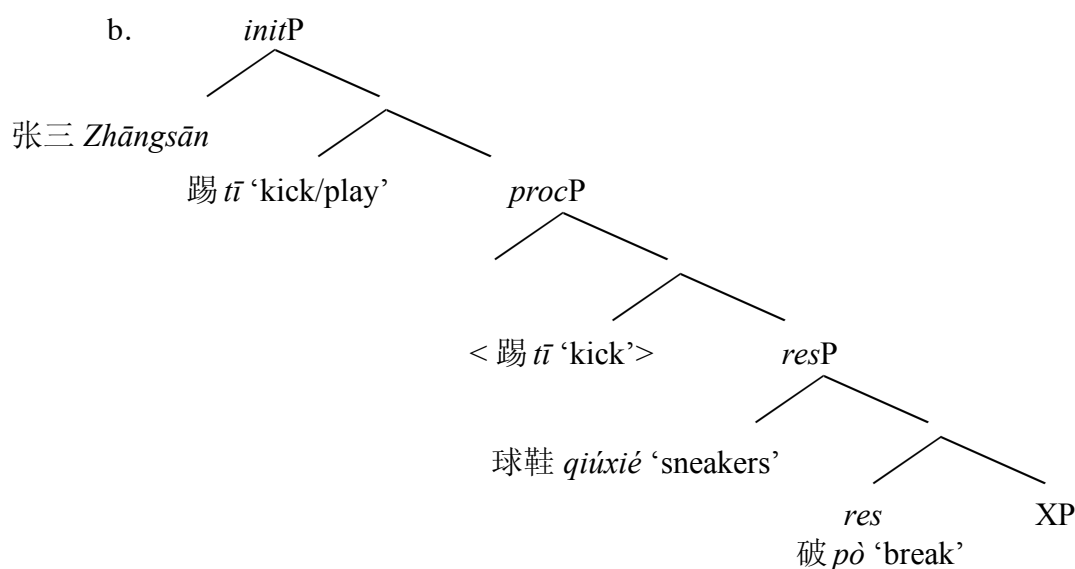
(63)　　*我　　骑累　　　　了　　　自行车
　　　　　wǒ　*qílèi*　　　*le*　　*zìxíngchē*
　　　　　I　　ride-tired　ASP　　bicycle
　　　　　'I rode the bicycle tired'

In the sentence in (63), 自行车 *zìxíngchē* 'bicycle' is an object subcategorized by V$_1$, i.e. it is an Undergoer. Since the Undergoer is expressed, the resultative compound, as we have seen, must be predicated of the (Undergoer) object; subject predication is excluded. However, V$_2$ in (63), 累 *lèi* 'tired', requires to be predicated of a [+animate] entity, thus 自行车 *zìxíngchē* 'bicycle' is not a possible holder of the result state and, as a consequence, the sentence is ungrammatical. In this case, the ungrammaticality of the sentence does not arise from structural problems but is related to the lexical-encyclopedic content of the NP object, which does not satisfy the predication requirement of 累 *lèi* 'tired'. This is even clearer if we substitute 骑累 *qílèi* 'ride-tired' with 骑坏 *qíhuài* 'ride-bad/ruin', in which case the sentence is grammatical, as shown in example (64):

(64)　　他　　骑坏　　　　了　　　3　　　辆　　　自行车
　　　　tā　*qíhuài*　　*le*　　*sān*　*liàng*　*zìxíngchē*
　　　　he　　ride-ruin　ASP　　three　CL　　bicycle
　　　　'He rode three bicycles and broke them'
　　　　(From the PKU corpus)

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The possibility for resultative compounds formed with a transitive V$_1$ with an Undergoer object to be used intransitively can also help to explain the availability of this kind of compounds with a non-subcategorized object, i.e. in which the object is not the Undergoer of V$_1$. See the example in (65), adapted from Huang C.T.J. (2006:21)[41]:

(65)　　a. 张三　　　踢破　了　　　　　　球鞋。　(cf. ex. 37a, chapter 5)
　　　　　　Zhāngsān　*tīpò*　*le*　　　　　*qiúxié*
　　　　　　he　kick-break　ASP　　　　　sneaker
　　　　　　'Zhangsan kicked his sneakers threadbare.'[42]

b. tree diagram:

- *init*P
  - 张三 *Zhāngsān*
  - 踢 *tī* 'kick/play'
    - *proc*P
      - < 踢 *tī* 'kick'>
      - *res*P
        - 球鞋 *qiúxié* 'sneakers'
        - res / XP
          - *res* 破 *pò* 'break'
          - XP

The Undergoer of V$_1$, e.g. 球 *qiú* 'ball', remains unexpressed, thus the Undergoer position is let empty. This would allow *res* to be predicated of a non-subcategorized object.

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[41] Note that in this case selectional restrictions do not allow the result state to be predicated of the Initiator, since 破 *pò* 'break' requires a non-animate subject (cf. ex. 60a).

[42] If the Undergoer position is filled, then the Undergoer must be the holder of the resultant state as well; it is not possible to have an Undergoer distinct from the Resultee, e.g. *张三踢坡了门球鞋 *Zhāngsān tīpò le mén qiúxié* 'Zhangsan kick-break ASP door sneakers'. We assume, following Ramchand (2008), that this is due to Case reasons. Ramchand (2008:62) supposes that Case is probably checked after the first phase syntax is complete, but provides constraints on it, since she assumes that only two arguments can be licensed by structural case in natural languages. According to Ramchand, *init* is the head responsible for the assignment of internal structural case, and the I inflectional head (or some decomposed element of it) is responsible for the assignment of nominative. Therefore, there are never more than two arguments licensed in specifier position, even though there are three positions available in the event-structure template. The case of double object verbs is different, since the second object is in the complement position of *res*P, and not in the specifier position (cf. 1.4.1.3). See also the case of resultatives like 教会 *jiāohuì* 'teach-know' (cf. exx. 72 and 73 below).

Examples like those in chapter 5, (69) and (70), can also be explained in such a way. For example, in the sentence in chapter 5, example (70a), i.e. 小王洗湿了鞋 *Xiǎo Wáng xǐshī le xié* 'Xiao Wang wash-wet ASP shoe = Xiao Wang washed the shoes wet', even though the object of the resultative compound seems to be a subcategorized object of V_1, nevertheless, as we have seen, this is not the case: in fact, the reading would be 'Lao Wang washed something and as a result his shoes got wet' (cf. Xiong & Liu 2006:121). Therefore, the Undergoer is not expressed and 鞋 *xié* 'shoes' is a non-subcategorized object, holder of the result state. The structure would be the same as the one proposed in (65b) above.

A further problem still remains to be explained, i.e. the ambiguity of sentences like the one in (3), repeated in (66) for the sake of clarity.

(66)　　张三　　　骑累　　　了　　马
　　　　Zhāngsān　qílèi　　le　　mǎ
　　　　Zhangsan　ride-tired　ASP　horse
　　　a. 'Zhangsan rode the horse tired'
　　　b. 'Zhangsan rode the horse and he got tired'

In the sentence in (66), if 马 *mǎ* 'horse' is a subcategorized object of V_1, then the only reading possible should be (66a), i.e. the object-oriented reading (see the structure in 62b); the reading in (66b) should be ruled out. Where does the subject-oriented reading arise from?

First of all, we have seen (cf. exx. 4 and 62) that, if the object is referential, e.g. 那匹马 *nà pǐ mǎ* 'that horse', the subject-oriented reading is ruled out, as expected. In the case of an object like 自行车 *zìxíngchē* 'bicycle' (63), we have seen that the presence of a referential (Undergoer) object rules out the subject-oriented reading; at the same time, selectional restrictions rule out the object-oriented reading as well. Moreover, Lin (2004) observes that, if the object 马 *mǎ* 'horse' in (66) is substituted with 猪 *zhū* 'pig', then the subject-oriented reading is ruled out (67).

(67)　　张三　　　骑累　　　了　　猪
　　　　Zhāngsān　qílèi　　le　　zhū
　　　　Zhangsan　ride-tired　ASP　pig
　　　a. 'Zhangsan rode the pig tired'
　　　b. *'Zhangsan rode the pig and he got tired'

These observations seem to suggest, as already highlighted by Cheng (1997), that the subject-oriented reading in (66b) does not involve a referential object (cf. 6.2.5), i.e. the object of the compound is not the Undergoer of the event. In fact, 骑马 *qímǎ* 'ride-horse' is also a complex verb meaning 'ride a horse, ride, be on horseback': e.g. 男孩[...]学习骑马 *nánhái xuéxí qímǎ* 'boy study ride-horse = The boys [...] learn to ride a horse' (from the PKU corpus). In this sense, 马 *mǎ* 'horse' would not be the Undergoer of the action but would rather be part of the verb meaning, i.e. it is a non-referential object just like dummy objects discussed in 1.4.1.2. This hypothesis seems to be supported from other similar verbs. For example, Shi (2008) observes that a sentence like (68a) is more acceptable than one like (68b).

(68) a. 爷爷　　　　开累　　　了　　车
　　　　yéye　　　*kāilèi*　　*le*　　*chē*
　　　　grandfatehr　drive-tired　ASP　vehicle/car
　　　　'Grandfather drove himself tired'
　　　b. *爷爷　　　　开累　　　了　　桑塔纳
　　　　　yéye　　　*kāilèi*　　*le*　　*Sāngtǎnà*
　　　　　grandfather　drive-tired　ASP　Wolkswagen Santana
　　　　　'Grandfather drove the Wolkswagen Santana and got tired.'
　　　　　(Examples from Shi 2008:254)

The verb 开车 *kāi chē* 'drive-vehicle/car' means 'drive or start a car, train, etc.; set a machine in motion' (cf. CECCED 2004), where 车 *chē* 'vehicle/car' is a dummy object (cf. Cheng & Sybesma 1998 and 1.4.1.2): e.g. 校车六点开车 *xiàochē liù diǎn kāichē* 'school bus six o'clock drive = the school bus leaves at 6 o'clock'; 我要学开车 *wǒ yào xué kāichē* 'I want learn drive = I want to learn to drive'; 一个卡车司机开车撞到了墙上 *yī ge kǎchē sījī kāichē zhuàngdào le qiáng shàng* 'one CL truck driver drive run/bump-into wall on = a truck driver crashed against a wall'. However, differently from other verbs with a dummy object, either unergative, like 跑 *pǎo* 'run' (跑步 *pǎo-bù* 'run-step = run/jog), or transitive with a Path object in their intransitive/unspecified object reading, like 吃 *chī* 'eat' (吃饭 *chīfàn* 'eat + rice/meal = eat'), we assume that the dummy objects in verbs like 开车 *kāi chē* 'drive-vehicle = drive' and 骑马 *qímǎ* 'ride-horse = ride a horse' are not in the complement position of *proc*P (cf. 1.4.1.12 and 1.4.1.2), but rather are incorporated into the verb from the Undergoer position. Along the lines of Cheng's (1997) proposal (cf. 6.2.5), we

assume that in a resultative compound the non-referential objects of verbs like 开车 *kāi chē* 'drive-vehicle = drive' and 骑马 *qímǎ* 'ride-horse' are incorporated into the verb only after V₁ adjoins to V₂.

In the example in (68a), 车 *chē* 'vehicle/car' can never be considered as a referential object, i.e. as the Undergoer of 开 *kāi* 'drive', since, if it were the case, it should be the Resultee as well. However, this is not possible because the result predicate, 累 *lèi* 'tired', may be predicated only of a [+animate] entity. This is the reason why the sentence in (68b) is ungrammatical: in this case, the object is referential, it is the Undergoer of the transitive verb 开 *kāi* 'drive'; however, it cannot be the Resultee, since the result predicate requires a [+animate] entity, and thus the sentence is ruled out, as in the case of example (63). In contrast, if the result could be predicated of the object, then the sentence would be grammatical, as it is demonstrated by sentences like the one in (69):

(69) 他   已经   开坏   了   4   辆   车
     tā   *yǐjīng*   *kāihuài*   *le*   *sì*   *liàng*   *chē*
     he   already   drive-ruin ASP   four CL   vehicle
     'He already drove and ruined four cars'
     (From "无手车王"诉交警大队讨要驾照案丽江开审 'In Lijiang the trial for the case of "the car king without hands" who begged the traffic police to grant him a driving licence has started'. In 云南网 *Yunnan wang*, 13/01/2009: http://yn.yunnan.cn/html/2009-01/13/content_195732.htm)

The sentence in (68a) cannot be ambiguous, because, as we have mentioned, if the object were interpreted as an Undergoer, the sentence would be ungrammatical, as the one in (68b). In contrast, the sentence in (66) can be ambiguous between a subject- and an object-oriented reading; the ambiguity in interpretation would depend on the degree of referentiality assigned to the postverbal NP: subject-oriented readings would be available only if the object is interpreted non-referentially, i.e. if it is not a real Undergoer. Differently from the sentence in (68), the object in the sentence in (66) can be interpreted either referentially or non-referentially because V₂, 累 *lèi* 'tired', can be predicated either of the subject or of the object, since it requires a [+animate] entity; thus both the subject and the object in (66) satisfy this requirement.

We can conclude that resultative compounds formed with a transitive V₁ with an Undergoer object have the result always predicated of the object, unless they are used

in the intransitive pattern or the postverbal NP is a non-referential object, in which case they get a subject-oriented reading.

Even though with the referentiality vs. non-referentiality of the object many ambiguities can apparently be explained, some problematic cases still remain, as those presented in (8) and (17), repeated in (70).

(70)   张三   追累   了   李四
       Zhāngsān   zhuīlèi   le   Lǐsì
       Zhangsan   chase-tired ASP   Lisi
       a. 'Zhangsan chased Lisi and Lisi got tired'
       b. 'Zhangsan chased Lisi and (Zhangsan) got tired'
       c. 'Lisi chased Zhangsan and Lisi got tired'

Many authors (e.g. Li 1995, Li 2000, Her 2004, 2006) have highlighted that the sentence in (70) has three possible interpretations. We set apart the causative interpretation in (70c)[43] and focus on the ambiguity between object-oriented (70a) and subject-oriented (70b) readings. It should be noted, that the sentence in (70a) is the preferred reading and that many native speakers do not get the reading in (70b). Cheng (1997:178, fn.7) judge the sentence in (70b) quite unlikely (cf. 6.2.5, fn.3 and fn.6). According to the results of a questionnaire by the Center of Chinese Linguistics PKU[44], most of the native speakers that judge the sentence in (70) acceptable get the reading in (70a). I got very similar results from my informants, confirming that the default reading of the sentence should be (70a). This is what the decomposition of the event predicts if we consider V_1, 追 *zhuī* 'chase', as a transitive [init, proc] verb with an Undergoer object. Since 李四 *Lǐsì* 'Lisi' apparently is an object subcategorized by V_1, i.e. is the Undergoer, and appear in the sentence, the only reading possible should be (70a). Moreover, 李四 *Lǐsì* 'Lisi' cannot be regarded as a non-referential object as those considered above. Why is the reading in (70b) somehow possible, then?

Apparently, a resultative compound with a transitive V_1 with an Undergoer can get the subject-oriented reading only when the compound is used intransitively (59a) or the postverbal object is non-referential (cf. 66b). One possible way to obtain the subject-oriented reading when the compound has a postverbal NP is to interpret it as

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[43] We suppose that this interpretation arises from a derived causative use, or 'inverted' causative structure (cf. Cheng & Huang 1994, Zou 1995, Her 2006): 'Zhangsan made Lisi tired from chasing him (Zhangsan), i.e. Zhangsan made Lisi chasing him and Lisi got tired'. We will return to this in the next section.

[44] http://ccl.pku.edu.cn/poll/result.asp?wj_id=1

part of an activity reading. Cheng and Huang (1994: 218-219, fn. 8) observe that "[F]or the object to be interpreted in the part-of-an activity reading, it can be a bare noun or a proper noun, but not a quantificational NP", as it is shown by the examples in (71), from Cheng and Huang (1994:218-219, fn.8):

(71) a. 张三   追累   了   小偷 了
        Zhāngsān *zhuīlèi*   *le*   *xiǎotōu le*
        Zhangsan   chase-tired   ASP   thief   FP
        'Zhangsan chased the thief tired'   (object-oriented reading)
                    OR
        'Zhangsan got tired from thief-chasing' (subject-oriented reading)
    b. 张三   追累   了   胡斐   了
        Zhāngsān *zhuīlèi*   *le*   *Hú Fěi*   *le*
        Zhangsan   chase-tired   ASP   Hu Fei   FP
        'Zhangsan chased Hu Fei tired'   (object-oriented reading)
                    OR
        'Zhangsan got tired from chasing Hufei' (subject-oriented reading)
    c. 张三   追累   了   三   个   小偷 了
        Zhāngsān *zhuīlèi*   *le*   *sān* *ge*   *xiǎotōu le*
        Zhangsan   chase-tired   ASP   three CL   thief   FP
        'Zhangsan   chased three thieves tired' (object-oriented reading)
        (subject-oriented reading not allowed)
    d. 张三   追累   了   几   个   小偷？
        Zhāngsān *zhuīlèi*   *le*   *jǐ*   *ge*   *xiǎotōu*
        Zhangsan   chase-tired   ASP   how many CL   thief
        'How many thieves did Zhangsan chased tired?' (object-oriented reading)
        (subject-oriented reading not allowed)

According to Cheng & Huang (1994), lexical elements like proper names and non-referential NPs may be treated as within a self-contained description of an activity and, thus, do not need to be treated as true arguments of a sentence. Following this hypothesis, the examples above can be treated on a par with other cases involving non-referential objects considered above. However, we think that, in the case of 追 *zhuī* 'chase' the ambiguity could have possibly to do with the characteristics of this verb, which is a verb expressing both a manner and a path[45]. According to us, the object of the verb 追 *zhuī* 'chase' seems to be ambiguous between being an Undergoer and a Path; in the latter case, the chaser undergoes a motion (change of

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[45] This means that it is similar to a verb like *follow*, where the object is not a patient but a path (cf. Goldberg & Jackendoff 2004:24-25; cf. also Croft 2000, RH&L 2001, and 5.2.2.1, ex. 11a).

place) determined by the path of the chasee[46]. When 追 *zhuī* 'chase' is used as V$_1$ in a resultative compound, if the object is interpreted as an Undergoer, only the object-oriented reading (70a) should be possible (unless you consider it as part of an activity reading, as seen above). The subject-oriented reading (70b) can only arise when the object is interpreted as a Path; in this case, the object, Lisi, further specifies what Zhangsan is tired of (it is in the complement position of *res*P; cf. the structure in 54)[47]. Note also that, if we were to consider the object of 追 *zhuī* 'chase' just as a Path and not as an Undergoer, then, not only the subject-oriented reading, but also the object-oriented reading, in principle, should be possible. In such case, the Path object appears in the specifier position of *res*P and is the Resultee of the event, which should be possible given the fact that V$_2$, 累 *lèi* 'tired' (*res*), can be predicated both of the subject and of the object of (70), since it requires a [+animate] entity; the structure should be the same as the one in (58). For the moment being, we will not go further into the problem; we leave this issue for further research.

One last point concerns resultative with a ditransitive V$_1$ (see chapter 5, ex. 43). These compounds behave exactly as those with transitive V$_1$s with an Undergoer object: when the resultative compound is transitive, the result is predicated of the object (cf. chapter 5, ex. 43c); when it is intransitive, the result is predicated of the subject (cf. chapter 5, exx. 43a-b). However, we would also like to point out the example in (72), from Xiong & Liu (2006:120).

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[46] In English, the verb *chase* has, at least, the following meanings: 1) "pursue in order to catch or catch up with": *police chased the stolen car through the* city; *the dog chased after the stick*; 2) "drive or cause to go in a specified direction": *she chased him out of the house*; 3) "seek to attain": *seventy candidates chasing a single job*; 4) "seek the company of (a member of the opposite sex) in an obvious way": *playing football by day and chasing women by night* (cf. NOAD 2005). In Chinese the verb 追 *zhuī* 'chase' seems to have the same meanings: 1) 艾米在两个卧室之间来回追着猫 *Àimǐ zài liǎng ge wòshì zhī jiān láihuí zhuī zhe māo* 'Amy at two ASP bedroom PART between go-to-and-fro chase ASP cat = Amy is chasing the cat back and forth between two bedrooms' (form the Nciku dictionary: http://www.nciku.com/search/all/examples/%E8%BF%BD); 2) 队长追回来两个人 *duìzhǎng zhuī huí lái liǎng ge rén* 'captain chase return two CL person = the captain chased two people back (from HDYC 1999); 3) 追新生活 *zhuī xīn shēnghuó* 'chase new life = chase a new life' (from HDYC 1999); 4) 我发现了一个追女孩的新方法 *wǒ fāxiàn le yī ge zhuī nǚhái de xīn fāngfǎ* 'I realize ASP one CL chase woman DE new method = I discovered a new way to chase girls' (form the Nciku dictionary: http://www.nciku.com/search/all/examples/%E8%BF%BD).

[47] The unavailability of subject-oriented readings for the sentences (71c) and (71d) could depend on the fact that their objects are not suitable for further specifying the result state, i.e. what one is tired of. See the case of 饱 *bǎo* 'full' seen above (cf. fn. 37). For an analysis of 累 *lèi* as a two-place predicate in the subject-oriented reading, see Sybesma (1999:51-54).
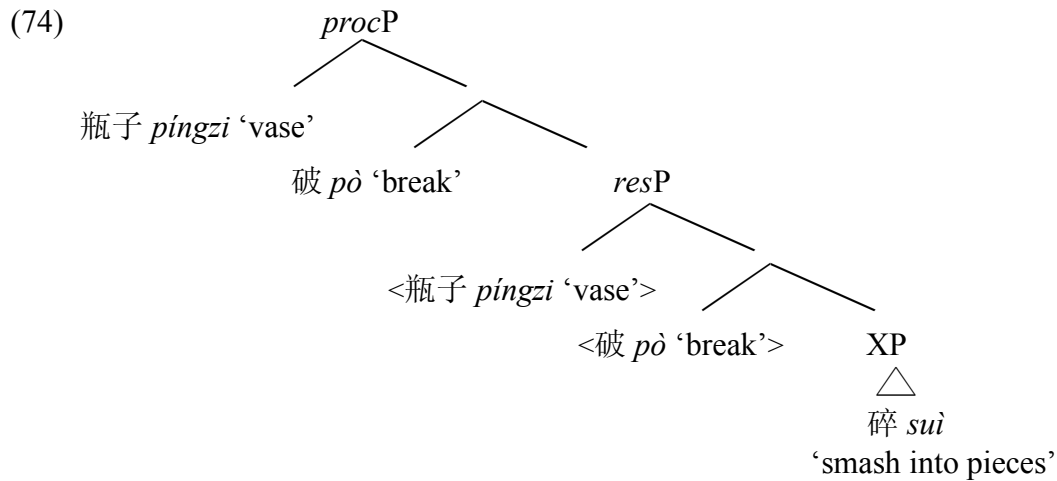
(72) 我　　教会　　　　孩子　数数
　　　wǒ　　*jiāohuì*　　　*háizi*　*shǔshù*
　　　I　　teach-know　child　count
　　　'I teach the child how to count (I teach the child and as a result the child know counting)'

The verb 教 *jiāo* 'teach' seems to transfer to the whole compound all its three arguments. We argue that this is possible since the second argument, 数数 *shǔshù* 'count', is also the argument of the result V₂ (the *res*P head is identified by a transitive stative verb, 会 *huì* 'know'), and thus sits in its complement position (73).

(73)
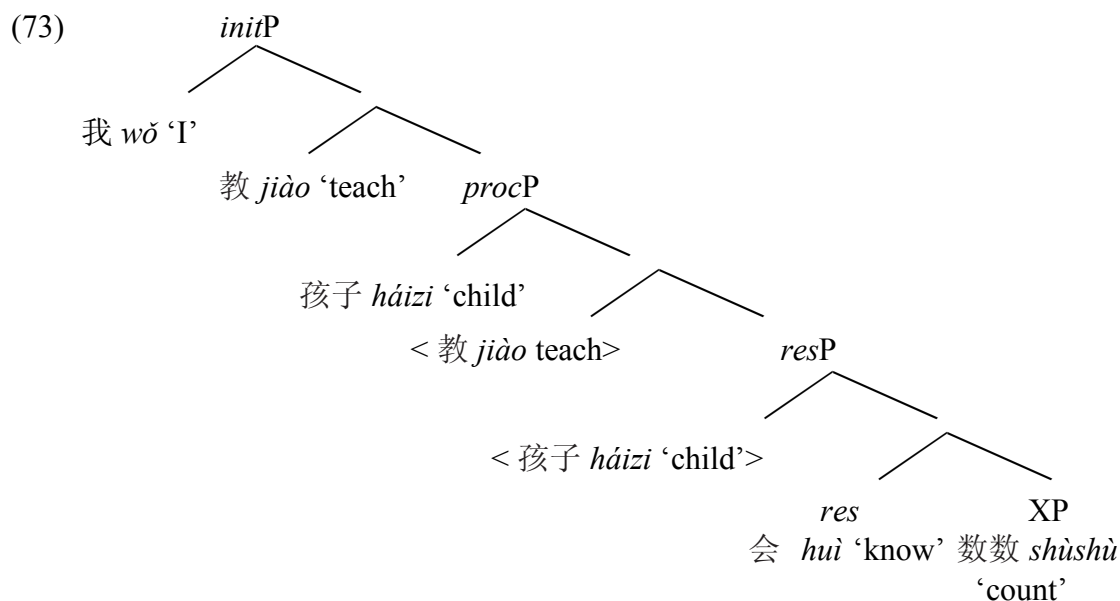
6.3.2.3 Resultative compounds with an intransitive [proc, res] V₁

In 5.3 (ex. 39), we have considered the case of resultative compounds formed with a V₁ which already possesses a [res] feature in its lexical entry. We have assumed that in these cases the resultative compound does not have a causative structure and V₂ seems to further specify the final state already expressed by *res*, occupying the complement position of the *res*P. The structure of these compounds is represented in (74):

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(74)

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                        procP
                       /    \
          瓶子 píngzi 'vase'  \
                         /  \
              破 pò 'break'   resP
                            /   \
              <瓶子 píngzi 'vase'> \
                               /  \
                   <破 pò 'break'>  XP
                                    △
                                 碎 suì
                              'smash into pieces'
```

From the analysis of resultative compounds the following generalizations seem to emerge: Chinese resultative compounds can have either a subject-oriented reading or an object-oriented reading. Intransitive resultatives and transitive resultatives with a non-referential object have a subject-oriented reading. Transitive resultative compounds with a referential object (either subcategorized or not) have an object-oriented reading. However, transitive resultative compounds where V_1 is a transitive verb with a Path object can have both subject- and object-oriented readings. The subject-oriented reading arises when the postverbal object is not a Resultee, but rather is a rhematic complement of *res* further specifying the result state; these cases includes also those compounds in which V_2 is a transitive stative verb, where the postverbal NP is the object of both V_1 and of V_2 and sits in the complement position of V_2

6.3.2.4 Some remarks on pseudo-passive resultatives

In 4.5.3 we have mentioned that some resultative compounds seem to manifest a inchoative-causative alternation (cf. Cheng & Huang 1994), as in the examples in (75), from Cheng & Huang 1994:207).

(75) a. 手帕　　　哭湿　了　　cf. aⁱ.他 哭湿　　了　手帕
        shǒupà　kūshī　le　　　　　*tā kūshī　le　shǒupà*
        handkerchief cry-wet ASP　　he cry-wet ASP handkerchief
        'The handkerchief (was) cried wet'　'He cried the handkerchief wet'
      b. 气球　　　吹破　　　了　cf. bⁱ.他 吹破　　了　气球
        qìqiú　chuīpò　le　　　　*tā chuīpò　le　qìqiú*
        balloon　blow-broken ASP　　he blow-broken ASP balloon
        'The balloon (was) popped'　　'He popped the balloon'

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We have already mentioned that the intransitive resultatives in (75a) and (75b), just like in the case of causative verbs with a light V_1, should be considered as pseudo-passives (cf. Cheng & Huang 1994). Here we just want to make a brief remark on these forms. Cheng (1989) observes that compounds with V_1 such as 打 *dǎ* 'hit' and 踢 *tī* 'kick' never alternate. See the examples in (76), adapted from Cheng (1989:92)[48].

(76)   a. 张三   踢倒   了   李四
           Zhāngsān   tīdào   le   Lǐsì
           Zhangsan   kick-fall   ASP   Lisi
        'Zhangsan kicked Lisi and as a result Lisi fell'
        b. *李四   踢倒   了
           Lǐsì   tīdào   le
           Lisi   kick-fall   ASP
        'Lisi was kicked and he fell'

Cheng (1989) points out that the reading of these sentences, if possible, indicates that the argument in the subject position gets the external theta-role and not the internal one, i.e. they are assumed to be Initiators of the action (see ex. 59 above): 'Lisi kicked something and as a result fell'. Therefore, Cheng concludes that these verbs do not allow the elimination of the external theta-role. Cheng tries to highlight the differences between the pushing/pulling class of verbs and the hitting/kicking class of verbs: a) in the pushing/pulling class one cannot perform the action to oneself, while in the kicking/hitting class one can; b) in the pushing/pulling class there are natural results, while verbs in the hitting/kicking class do not have results which necessarily follow from the action. However, Cheng cannot find how these distinctions are related to the obligatoriness of the agent.

We hypothesize that the pseudo-passive version of these resultatives is possible only if their subject is not a possible Initiator of V_1 and, at the same time, is a possible holder of the result state, otherwise it would be interpreted as the intransitive version of a resultative compound with a transitive V_1, where the object is not expressed (e.g. ex. 59). For example, we have seen that (76a) can be interpreted as 'Lisi kicked something and as a result fell', which would be a plausible reading. The V_1 in (76), 踢 *tī* 'kick', requires a [+animate] Initiator; since the NP in the subject position in (76b)

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[48] We set apart examples with 打 *dǎ* 'hit', because often 打 *dǎ* 'hit' is ambiguous between being a full verbal root and a light verb (cf. 4.5.1).

is [+animate], and the result V$_2$ can be predicated of the subject, it is normally interpreted as the Initiator of the action. Therefore, the sentence in (76b) would normally be interpreted as a normal intransitive resultative, where the Undergoer is not expressed[49]. However, if the subject is [-animate], i.e. it is not a possible Initiator of V$_1$, and V$_2$ can be predicated of a [-animate] entity, then the pseudo-passive formation seems to be possible[50]:

(77)   门   踢破   了
       mén   *tīpò*   *le*
       door   kick-broken   ASP
       'The door was kicked-broken'
       (From Tai 2006)

Intransitive resultative compounds with a transitive V$_1$ (Undergoer object) are normal resultatives with a subject-oriented reading, if the subject is a possible Initiator and also a possible Resultee; if the subject is not a possible Initiator, but rather is the holder of the result state, then these resultative compounds are used as pseudo-passives.

6.3.2.5 'Inverted' causative resultatives

Another problem related to resultative compounds are causative constructions like those in (78) (cf. Cheng & Huang 1994, Zou 1995, Huang H.C. 2006, Her 2006).

(78)   a. 青草   吃肥 了   羊儿。
         qīngcǎo   *chīféi* *le*   *yángr*
         green grass eat-fat ASP   sheep
         'The green grass ate the sheep fat (the green grass made the sheep fat from eating it).'
         (From Xiong & Liu 2006:123)
       b. 那   匹   马   骑累   了   他。
         nà   *pǐ* *mǎ* *qílèi*   *le*   *tā*
         that   CL   horse ride-tired ASP he
         'That horse rode him tired (that horse made him tired from riding it).'

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[49] If the result cannot be predicated of the subject, the object, as we have seen, would be required, otherwise the sentence is ungrammatical, e.g. *他洗干净了 *tā xǐ gānjìng le* 'he wash-clean ASP = he washed clean', *他哭湿了 *tā kū shī le* 'he cry-wet ASP = he cried-wet' (cf. ex. 60).

[50] Note that if the subject is [-animate] and V$_2$ can only be predicated of a [+animate] entity, e.g. 累 *lèi* 'tired', the sentence will necessarily be ungrammatical, since the subject cannot be the holder of the resultant state.

c. 那　　瓶　酒　喝醉　　　了　他。
   nà　　píng jiǔ　hēzuì　　　le　tā
   that　CL　wine　drink-drunk　ASP　he
   'That bottle of wine drank him drunk (that bottle of wine made him drunk from drinking it).'

d. 一　个　　恶梦　　　　哭醒　　　了　他。　(cf. chapter 5, ex. 49b)
   yī　ge　　èmèng　　　kūxǐng　　　le　tā
   one　CL　　nightmare　　cry-awake　ASP　he
   'A nightmare cried him awake (a nightmare caused him to cry (himself) awake.'

e. 这　件　　事　哭累　　　了　张三　　　的　　眼睛。
   zhè jiàn　shì　kūlèi　　　le　Zhāngsān　　de　　yǎnjīng
   this CL　　matter cry-tired　ASP　Zhangsan　　DE　　eye
   'This matter cried Zhangsan's eyes tired (this matter made Zhangsan's eyes tired from crying).'

f. 那　张　报纸　　看花　　　了　他　的　　眼睛。
   nà　zhāng bàozhǐ　kànhuā　　le　tā　de　　yǎnjīng
   that CL　newspaper read-blurred ASP　he　DE　　eye
   'That newspaper read his eyes blurred (that newspaper made his eyes blurred from reading it).'

g. 那　杯　酒　醉倒　　　了　张三。　(cf. ex. 6)
   nà　bēi　jiǔ　zuìdào　　le　Zhāngsān
   that　CL　wine　drunk-fall　ASP　Zhangsan
   'That glass of wine made Zhangsan so drunk (from drinking it) that he fell.'

Cheng & Huang (1994) assume that a resultative with a V_1 denoting an activity can be used in the non-active sense when the V_1's logical subject is not the ultimate Initiator of the event: there is an external Causer and V_1's subject is a Causee, which, according to them, is equivalent to an Experiencer with no control over the event. Therefore, a Causee should be treated on a par with an Experiencer, i.e. as an internal argument at the level of syntactic structure (cf. 6.2.4).

Huang H.C. (2006:28) points out that the 'inverted' causative construction contributes a kind of direct, non-agentive Causer to the grammatical subject position. From the examples in (78), it seems clear that this kind of causativization process can apply to all kind of resultatives, independently of the kind of V_1 involved: V_1 can be unergative (78d-e), transitive (78a-b, f) or unaccusative (78g). However, apparently the external Causer cannot be a possible Initiator of V_1 (or Undergoer in the case of unaccusative V_1s), but nevertheless must be part of the event denoted by V_1; it can be the Undergor, the Path or, else, some other element involved in the event (see ex. 78d,

for example[51]). Moreover, the Causee (the postverbal NP) should be the entity responsible for bringing about the action expressed by V_1 (Initiator, in the case of [init, proc] verbs)[52] or undergoing the change of state (Undergoer, in the case of [proc] verbs), and also the holder of the result state. For example, Huang H.C. (2006) points out that in a sentence like the one in (78g), while the wine does not directly take part in the event specified by the verb, it is crucial in bringing about that event. Huang H.C. (2006:28), indeed, observes that the addition of a Causer role is not free, but rather constrained: not all grammatical subjects can receive the Causer role (79).

（79） a. *李四　　喝醉　　　　了　　张三
　　　　　*Lǐsì　　hēzuì　　　le　　Zhāngsān
　　　　　Lisi　　drink-drunk　ASP　Zhangsan
　　　　　'Lisi made Zhangsan drink and as a result Zhangsan got drunk'

　　　b. *这　件　事　哭湿　　了　手帕
　　　　　*zhè　jiàn　shì　kūshī　le　shǒupà
　　　　　this　CL　matter　cry-wet　ASP　handkerchief
　　　　　'This matter made the handkerchief to be cried wet.'

　　　c. *李四　　醉倒　　　　了　　张三
　　　　　*Lǐsì　　zuìdào　　　le　　Zhāngsān
　　　　　Lisi　　drunk-fall　ASP　Zhangsan
　　　　　'Lisi made Zhangsan so drunk that he fell'

The sentence in (79a) is ungrammatical because 李四 *Lǐsì* 'Lisi' is a possible Initiator of V_1; the sentence has two agentive participants, but the event described by 喝 *hē* 'drink' has only one agentive participant, i.e. the Initiator. The sentence in (79b) is ungrammatical since the postverbal NP is not a possible participant of the event described by V_1, 哭 *kū* 'cry', which takes a single Initiator$_i$-Undergoer$_i$ role[53]; thus the sentence lacks the entity performing the action, which is essential to the event. Lastly, in the case of (79c), V_1 is an unaccusative verb with a single Undergoer participant. The Undergoer of the process of getting drunk is 张三 *Zhāngsān* 'Zhangsan'; this process is supposed to be caused/initiated by wine (or other alcohol)-drinking, which

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[51] Note that a verb like 哭 *kū* 'cry' can take as complement an NP indicating cause/reason, e.g. 我哭了母亲 *wǒ kū le mǔqīn* 'I cry ASP mother = I cried for my mother', or also a place, e.g. 孟姜女哭长城 *Mèng Jiāngnǚ kū chángchéng* 'Meng Jiangnü cry the Great Wall = Meng Jiangnü cries at the Great Wall' (cf. HDYC 1999) (cf. 1.4.1.2 and chapter 1, fn. 60).

[52] Or it should be directedly linked with it, representing an inalienably possessed NP, generally a body part (78 e-f).

[53] In contrast, the subject, 这件事 *zhè jiàn shì* 'this matter', is perfectly acceptable, since it is not a possible Initiator, but nevertheless can be part of the event, i.e. indicate the cause/reason underlying the action expressed by V_1, i.e. 哭 *kū* 'cry' (cf. fn. 51)

is implicitly part of the event and can appear as the external cause. Huang H.C. (2006) observes that the subject 李四 *Lǐsì* 'Lisi' could only be interpreted as an external instigator of the event, but he does not take part in the event itself: he could only force the event to happen by solicitation or commands.

In the case of the (c) reading in the sentence in (70), i.e. 张三追累了李四 *Zhāngsān zhuīlèi le Lǐsì* 'Lisi chased Zhangsan and Lisi got tired', we suppose that we are dealing with an example of causative construction, like those seen above. The sentence, in fact, should be interpreted as 'Zhangsan made Lisi tired from chasing him (Zhangsan)' (cf. fn. 43). Since 张三 *Zhāngsān* 'Zhangsan' is a possible Initiator of V$_1$, the sentence with this meaning should be ruled out. However, the event of chasing presupposes two participants, a chaser and a chasee, and therefore it has two roles, both [+animate], e.g. 张三追了李四 *Zhāngsān zhuī le Lǐsì* 'Zhangsan chased Lisi'. Thus, the causative interpretation is possible since 张三 *Zhāngsān* 'Zhangsan' can be seen as the chasee and is part of the event; it is crucial in the bringing about of the event but he does not control it (it is not Zhangsan who forces Lisi to chase him). Given these facts, the constraints on the kind of possible external causers in causative constructions like those in (78) could be due to the fact that these constructions are an instance of direct causation with the presence of an intermediate entity representing the enabling condition, e.g. the bottle of wine in (78c). Recall that Wolff (2003) points out that direct causation occurs in two different circumstances: either when there are no intermediate entities at the same level of granularity as either the initial causer or final causee or, if an intermediate entity is present, it can be construed as an enabling condition rather than an intervening causer (cf. 2.3). We assume that the sentences in (78) represent instances of the latter case of direct causation argued for by Wolff, where enabling conditions are present: the grass enables the sheep to eat itself fat; the horse enables him to run himself tired; the wine enables him to drink himself drunk, etc. Therefore, the external causes in (78) should be seen as enabling conditions rather than intervening causers; possible intervening causers are excluded from this construction.

Now, the question is: how is it possible to derive the structure of these causative resultatives? We have already seen in the previous sections the proposals put forth by some authors (e.g. Cheng & Huang 1994, Cheng 1997, Her 2004, 2006, Huang H.C. 2006). An alternative account is the one in Huang, Li & Li (2009). These authors

adopt a syntactic approach to the argument structure of verbs, which resembles different aspects of previous theories (e.g. Hale & Keyser 1993, Lin T.H. 2001, Borer 2005). Huang, Li & Li (2009:62-66) propose that a lexical root √ conceptualizes a set of events *e* and contains the information on all the participants of *e*. A lexical verb is composed of √ and a small numbers of light verbs (Lv), which indicate the event types of *e*. They claim that only the information on participants of *e* which bear directly on the nature of the event time are transferred to Lv and remain accessible to syntax (which is the origin of theta roles, according to them). They suggest that Chinese differs from English in allowing no Lv in V, exposing all participant information encoded in √ to syntax and creating the effect of thematic liberality[54]; this is based on the observation that the thematic relations between a Chinese verb and its arguments are more varied than those found in English (cf. Lin T.H. 2001).

Following this hypothesis, Huang, Li & Li (2009:71) suggest that the apparently reversed theta-role assignment in Chinese resultative constructions (78) has a simple explanation. In fact, since Chinese has the option of not including Lvs in a verb, the resultative compounds in (78) can be interpreted as being composed of just two roots, e.g. √喝 *hē* 'drink' and √醉 *zuì* 'drunk' (78c). Since there is no Lv2, no Agent reading is required under the theta criterion. When the compound is placed in syntax, the NP 酒 *jiǔ* 'wine' is interpreted in connection with √喝 *hē* 'drink' as the passive participant of drinking, and the NP 我 *wǒ* 'I' is interpreted in connection with √醉 *zuì* 'drunk'. Huang, Li & Li (2009) argue that both NPs satisfy Full Interpretation semantically and are licensed syntactically by receiving the subject and object Cases. The NP 我 *wǒ* 'I', according to these authors, is also understood as the drinker due to "world knowledge" without any structurally established relations between 我 *wǒ* 'I'

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[54] The theory is formally represented as follows: V ∈ {(√), [Lv1 √], [Lv2 √], [Lv2 [Lv1 √]]}, where the option of V = √ is available only in Chinese.
Lv1 = type of event which happens without an external cause, i.e. "enter S (state)" or "enter R (relation)". The participant that enters the state or relation is interpreted as a Theme.
Lv2 = type of event with an internal cause, i.e. "bring about of E (event)" or "bring about of R". The external cause, interpreted as Agent (or Originator, e.g. Borer 2005), is implicated by Lv2 but is not an argument of V, as an external factor is not conceptualized as part of the event described by V.
Other intrinsic participants of E, S and R are manifested as optional or obligatory theta roles, as determined by √.
The choice of an Lv must not conflict with the type of event already encoded in √.
Participant information resulting from the constraints above must satisfy the theta-criterion.
(cf. Huang, Li & Li 2009:62-63).

and √喝 *hē* 'drink' (cf. Hoekstra 1988; cf. also 6.2.6), since if wine-drinking caused me to get drunk, then I must have done the drinking.

This theory is appealing and seems to be able to give a very simple answer to a very complicated problem. So, if NP$_2$ has no established relations with V$_1$, it is only world-knowledge that can tell us that an example as (79c) is ruled out, while (78g) is allowed. However, in light of the restrictions found above, we think that the information on the participant roles of V1 does play a role (together with some selectional restrictions imposed by the lexical content of V2). In Ramchand's (2008) system, the specifier position of *init*P introduces the causation event that leads to the process and licences the external argument. As we have seen (cf. 1.4), the Initiator does not entail agentivity, e.g. 'the key' in *the key opened the lock* is the Initiator (cf. Ramchand 2008). Therefore, nothing prevents non-agentive objects like those in (78) to appear in the Initiator position. However, the lexical-encyclopedic content of a verbal root like 喝 *hē* 'drink' requires an agent as Initiator, and in fact 那瓶酒 *nà píng jiǔ* 'that bottle of wine' is not the Initiator of the event. How to derive the structure then?

Ramchand (2008:192) points out the case of English transitive verbs that appear with abstract causes, like those in (80), from Ramchand (2008:192):

(80)   a. *This sofa seats three.*
        b. *The wind threw the clothes from the washing line.*
        c. *The crime situation reduced the revenues from tourism.*

Similar examples apparently are found in Chinese as well (81)[55]:

(81)   a. 这　间　　小屋　睡　四　　个　　人。
           zhè jiān   xiǎowū shuì sì   ge   rén
           this CL   cabin sleep four   CL   person
           'This cabin sleeps four people.'
           (From Her 2009:1151)
        b. 一　磷　　　肉　吃　两　　个　　人。
           yī bàng   ròu chī liǎng   ge   rén
           one CL (pound) meat eat two   CL   person
           'One pound of meat feeds/serves two people.'
           (From Her 2009:1154)

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[55] Apparently this cause has to be referential. For different kinds of causes that can appear in these constructions, cf. Her (2009).

Ramchand (2008) suggests that it is plausible that, when transitive verbs in English appear with abstract causes as subjects instead of subjects with the expected active involvement in the event (80), a general causational head (which in English is also responsible for the causative alternation, cf. 2.4.2) is merged in *init*. Since the null *init* head has impoverished encyclopedic content, it does not impose any particular requirement on the Initiator and this would account for the variety of subjects allowed. However, Ramchand (2008) assumes that in each particular case world-knowledge would play a role in determining the acceptability of particular kinds of subjects.

Following Ramchand's (2008) insight, we suppose that the Chinese causative resultatives shown in (78) too can imply the presence of a null *init* head, i.e. a general causational head, which introduces the external causer in its specifier position. If this were the case, the presence of the null *init* head would force the [init] feature of the verb to be unassociated. The proposed structure for (78c) is shown in (82):

(82)

                    *init*P

那瓶酒 *nà píng jiǔ*
'this bottle of wine'   Ø   *proc*P

        他 *tā* 'he'

          喝 *hē* 'drink' [init]   *res*P

              < 他 *tā* 'he' >

                    res   XP
                    醉 *zuì* 'drunk'
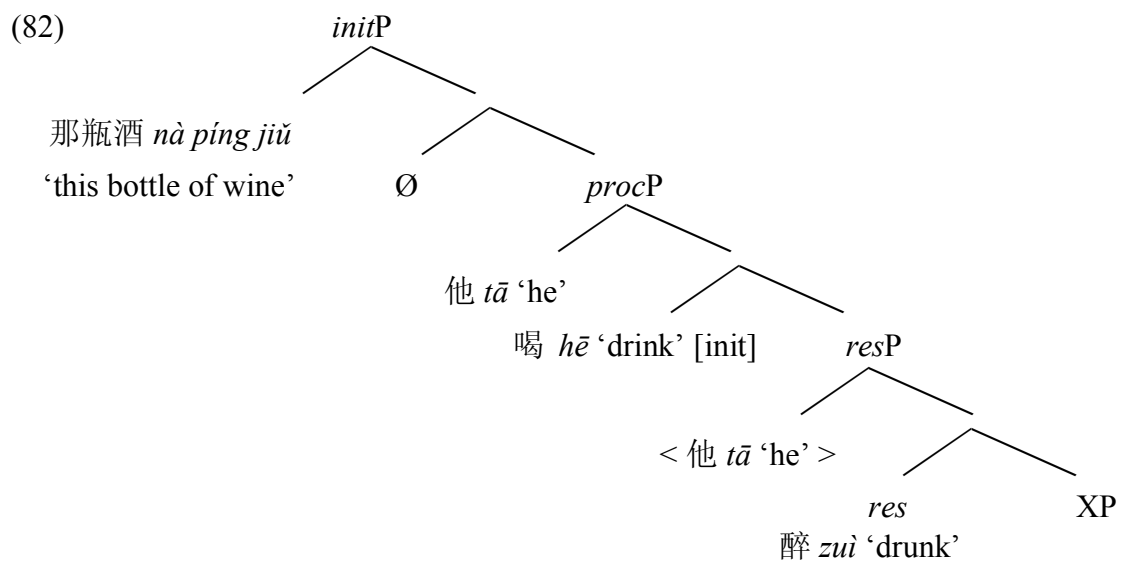
In the case of V₁ lacking an [init] feature, the null *init* head would simply build an extra layer on top of the structure, as in (83), representing (78g).

(83)

```
                    initP
                   /    \
  那杯酒 nà bēi jiǔ      /
  'this glass of wine'  Ø    procP
                            /    \
              张三 Zhāngsān 'Zhangsan'
                                 /    \
                          醉 zuì 'drunk'  resP
                                        /    \
                  < 张三 Zhāngsān 'Zhangsan' >
                                             /    \
                                          res      XP
                                       倒 dào 'fall'
```

The surface structure would be derived from movement of the verb from the *proc* position into the null *init* head position[56].

6.3.3 Headedness in resultative compounds

As far as headedness of Chinese resultative compounds is concerned, a lot of different proposals have been made in the literature: V_1 is the head of the resultative compound (e.g. Li Y. 1990, 1995; Cheng & Huang 1994; Wang L.L. 2001); V_2 is the head of the compound (e.g. Tai 2003, Yong 1997); both V_1 and V_2 act as heads (e.g. Gu 1992); the compound is headless (Huang & Lin 1992, Li 2008). After a review of the different position on headedness in resultative compounds, we will support the position that V_1 is the head of the compound.

6.3.3.1 Resultative compounds are left-headed

Li (1990), on the basis of syntactic considerations, argues that the head of resultative compounds is V_1. As we have seen (cf. 6.2.1), Li tries to derive the argument structure of the whole resultative compound from the argument structure of its constituents. Since the two constituents together can convey more than the two arguments typically allowed (due to Case reasons), and the number of roles may exceed the number of four, there are many possibilities as to the arguments that may be left

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[56] An alternative account would be to assume the presence of an extra causative projection onto the three-layer eventive structure, which would derive these causative constructions (cf. Cheng 1997).

unexpressed. Li assumes that almost all the logical possibilities are allowed, but there is a unique constraint: the external argument of V1 has to be transferred to the whole compound and realized as its external argument. In contrast, there is no similar requirement for V_2. Therefore, this would indicate that V_1 is the head, since it is assumed that certain relevant features of the head are obligatory, but not those of the non-head constituents. Li further suggests that the argument structure of the head V_1 is obligatorily transferred to the whole compound, thus this would account for why the external argument of V_1 is realized as the external argument of the resultative compound[57]. However, as it should be clear from the description and analysis of resultative compounds in the previous sections, the transitivity of the whole compound does not depend on the transitivity of either of its components (cf. also Cheng & Huang 1994).

Cheng & Huang (1994) agree with Li (1990) in postulating left-headedness for resultative compounds. However, they rely on the aspectual structure of the compound rather than on transitivity properties (cf. 6.2.4). On this basis, Cheng & Huang argue that V_1 is the head of the compound. In fact, while V_2 does not contribute to a difference in the event type (it always express a state or change of state, independently of the type of compound), V_1 plays a central role in determining the event type of the compound: when V_1 is unergative or transitive, the whole compound is unergative or transitive; when V_1 is non-active, the whole compound is either unaccusative or causative (cf. 6.2.4). Therefore, the event type of the whole compound depends on the event type of V_1 rather than on that of V_2, thus V_1 is the head of the compound. According to Cheng & Huang (1994:194), the thematic structure of a predicate is derived from its aspectual structure, which in turn reflects the left-headed nature of the internal structure of the compound. Headedness is determined on the basis of syntactic, rather than purely semantic, considerations (as in Li Y. 1990), since the notion of head is considered to be a structural notion.

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[57] This assumption cannot explain the causative paradigm illustrated in the previous section, where the external argument of the compound is not the external argument of V_1. Li himself (cf. Li 1993) put forward a modified proposal, suggesting that the causative hierarchy may override the thematic hierarchy, as we have mentioned in 6.2.1.

6.3.3.2 Resultative compounds are right-headed

In the literature, many authors have assumed the opposite view concerning headedness in resultative compounds, i.e. in a resultative compound V_2 is the head (e.g. Tai 2003, Wang 1995, Yong 1997): according to this view, V_2 is the semantic focus of a resultative compound and, thus, is the head. According to Tai (2003), V_2 acts as the "center of predication", while V_1 acts as a manner adverb. Therefore, a compound like 踢开 *tīkāi* 'kick-open' should be interpreted as 'open by pushing'. According to Cheng & Huang (1994), this seems to be particularly true if we compare this example with compounds like 推开 *tuīkāi* 'push-open', 拉开 *lākāi* 'pull-open', 吹开 *chuīkāi* 'blow-open'. However, this kind of evidence is conceptual rather than empirical and, as highlighted by Cheng and Huang (1994: 192), this claim seems not to hold even on the conceptual level. They observe that headedness for the above mentioned compounds is determined on the basis of a set of examples describing different ways of opening, considering V_1 as an adverbial; but if one consider examples like 踢开 *tīkāi* 'kick-open', together with other compounds with the same V_1, as e.g. 踢倒 *tīdǎo* 'kick-fall', 踢破 *tīpò* 'kick-break', 踢扁 *tībiǎn* 'kick-flat', it would seem that different results arise from the action denoted by V_1, which may indicate that V1 is the semantic focus of the resultative compound. Therefore, these conceptual considerations by themselves only show that the semantics of a resultative compound is compositional and that both constituents contribute to the meaning of the whole compound, but cannot help to establish which constituent is the head.

As observed by Li (2008), Li (1984) tries to provide empirical evidence to support the claim that V_2 is the head of the compound, through the observation of the distributional behaviour of the two constituents. Li (1984) observes that, while V_1 of a resultative compound can be omitted, V_2 cannot. For example, given a resultative compound like 哭红 *kūhóng* 'cry-red' in (84a), V_2 cannot be omitted (84b), but V_1 can (84c).

(84)　a. 张三　　　的　　眼睛　哭红　　　了。
　　　　Zhāngsān　de　　yǎnjīng kūhóng　　le
　　　　Zhangsan　DE　　eye　　cry-red　　ASP
　　　　'Zhangsan's eyes were cried red.'

b. *张三　　　的　　　眼睛　哭　　　　了。
   Zhāngsān de　　*yǎnjīng kū*　　　*le*
   Zhangsan　DE　　eye　　cry　　ASP
   *'Zhangsan's eyes cried.'

c. 张三　　　的　　　眼睛　红　　　　了。
   Zhāngsān　de　　*yǎnjīng hóng*　　*le*
   Zhangsan　DE　　eye　　red　　ASP
   'Zhangsan's eyes became red.'
   (Examples adapted from Li 2008:738)

Based on this observation, Li (1984) concludes that V_2 is the head of the resultative compound. However, Li (2008) shows that this criterion is problematic. If we consider a compound like 洗干净 *xǐgānjìng* 'wash-clean' in the sentence in (85a), we can observe that V_1 can be omitted (85b), while V_2 cannot (85c).

(85)　a. 张三　　　洗干净　　　了　　衣服。
      Zhāngsān　xǐgānjìng　le　　yīfu
      Zhangsan　wash-clean　ASP　clothes
     'Zhangsan washed his clothes clean.'

     b. 张三　　　洗　　了　　衣服。
      Zhāngsān　xǐ　　le　　yīfu
      Zhangsan　wash　ASP　clothes
     'Zhangsan washed his clothes.'

     c. *张三　　干净　了　　衣服。
      Zhāngsān　gānjìng le　　yīfu
      Zhangsan　clean　ASP　clothes
     'Zhangsan cleaned his clothes.'
     (Examples adapted from Li 2008:738)

Applying Li's (1984) criterion to the compound in (85), one should conclude that V_1 rather than V_2 is the head of the compound.

Li (2008) further notices that the same criterion would suggest that the same compound in the sentence in (86) is headless, since both the constituents can possibly be omitted.

(86)　a. 衣服　　　洗干净　　　了。
     yīfu　　　*xǐgānjìng*　　*le*
     clothes　wash-clean　ASP
     'The clothes (were) washed clean.'

b. 衣服　　　洗　　　　　了。
　　yīfu　　　*xǐ*　　　　*le*
　　clothes　　wash　　　ASP
　　'The clothes (were) washed.'
c. 衣服　　　干净　　　　了。
　　yīfu　　　*gānjìng*　　*le*
　　clothes　　clean　　　ASP
　　'The clothes became clean.'
　　(Examples adapted from Li 2008:738-739)

Moreover, according to this criterion, a compound like 砍钝 *kǎndùn* 'cut-blunt' in (87) should be considered as double-headed since neither of the constituents can be omitted.

(87)　a. 张三　　　砍钝　　　了　　刀。
　　　　Zhāngsān　*kǎndùn*　*le*　*dāo*
　　　　Zhangsan　cut-blunt　ASP　knife
　　　　'Zhangsan cut (something with the knife) and as a result the knife became blunt.'
　　　b.*张三　　　砍　　　了　　刀。
　　　　Zhāngsān　*kǎn*　　*le*　*dāo*
　　　　Zhangsan　cut　　ASP　knife
　　　　'Intended: Zhangsan cut (something) with the knife'
　　　c.*张三　　　钝　　　了　　刀。
　　　　Zhāngsān　*dùn*　　*le*　*dāo*
　　　　Zhangsan　blunt　　ASP　knife
　　　　'Intended: Zhangsan made the knife blunt.'
　　　　(Examples adapted from Li 2008:739)

However, this criterion would suggest that the same compound, appearing in the intransitive pattern (88), is right-headed, since only V$_1$ can be omitted.

(88)　a. 刀　砍钝　　　了。
　　　　dāo　*kǎndùn*　　*le*
　　　　knife cut-blunt　ASP
　　　　'The knife cut blunt (The knife got blunt from cutting).'
　　　b. *刀　砍　　　了。
　　　　dāo　*kǎn*　　*le*
　　　　knife cut　　ASP
　　　　'Intended: (Somebody) cut (something) with the knife.'

c. 刀　钝　　　　　了。
　dāo　dùn　　　　le
　knife blunt　　　ASP
'The knife became blunt.'
(Examples adapted from Li 2008:739)

Therefore, Li's (1984) criterion seems not to be valid, since it would lead to the puzzling conclusion that resultative compounds can be right-headed, left-headed, double-headed or headless, and that the very same compound can have different behaviours as far as headedness is concerned, depending on the context in which it is inserted.

Shen (1992, cit. in Cheng & Huang 1994) tries to argue for right-headedness in resultative compounds adopting an approach similar to the one adopted by Li (1990). Shen concludes that in a resultative compound the head is V_2 rather than V_1, observing that it is V_2's external argument rather than V_1's that may fail to be realized as the argument of the whole compound. This observation is based on pseudo-passive formations (cf. 4.5.3), as in (86a), where the logical subject of V1 is not realized, whereas the logical subject of V_2 appears as the subject of the whole compound. The opposite situation is not allowed, e.g. *他洗干净了 *tā xǐ gānjìng le* 'he wash-clean ASP = he washed clean', *他哭湿了 *tā kū shī le* 'he cry-wet ASP = he cried wet'. Therefore, the external argument of V_2 must be projected to the whole compound. Following Li's (1990) claim that the external argument of a head must always be projected, Shen (1992) concludes that resultative compounds are right-headed. However, Cheng & Huang (1994) observe that Shen's (1992) arguments do not hold. First of all, as we have mentioned, the transitivity of the compound has little to do with the transitivity of its constituents. Therefore, as in the case of Li (1990), trying to establish headedness on this basis seems to be unable to give tenable results. Moreover, Cheng & Huang (1994) observe that, even though V_1's external argument is missing, its absence would be due to Agent-suppression (cf. 4.5.3): as in the case of passive formations, even though the Agent is suppressed in the syntax, it is still present in the semantics.

6.3.3.3 Resultative compounds are double-headed

Gu (1992) proposes that in a resultative compound both constituents act as heads, since both of them contribute to the argument structure of the whole compound. However, Li (2008) observes that, while Gu (1992) is right in pointing out that both constituents can contribute to the argument structure of the whole compound, it would be more proper to state that it is the argument of V_2 which must be realized, as shown in (89).

(89) a. 桌子　　　擦干净　　　了
         zhuōzi　　*cāgānjìng*　*le*
         table　　　wipe-clean　ASP
         'The table (was) wiped clean'

     b. 手帕　　　哭湿　　　了
         shǒupà　　*kūshī*　　*le*
         handkerchief cry-wet　ASP
         'The handkerchief (was) cried wet (The handkerchief got wet from someone's crying)'

     c. 张三　　　走累　　　了
         Zhāngsān　*zǒulèi*　　*le*
         Zhangsan　walk-tired　ASP
         'Zhangsan walked himself tired'

     d. 张三　　　吃饱　　　了
         Zhāngsān　*chībǎo*　　*le*
         Zhangsan　eat-full　　ASP
         'Zhangsan ate himself full'
         (Examples adapted from Li 2008:740-741)

In (89a) the compound external argument is both the subject of V_2 and the object of V_1. In (89c) and (89d), the external argument of the whole compound is the subject of both V_1 and V_2. However, Li (2008) observes that the fact that, in an example like the one in (85b), the argument of V_1 is not overtly realized at all (the subject being the argument of V_2), thus casting doubts on the two-headedness of resultative compounds.

6.3.3.4 Resultative compounds are headless

Huang & Lin (1992) assume that Chinese resultative compounds are headless on the basis of the observation that the transitivity of a resultative compound is neither determined by V_1 nor by V_2. In fact, as we have seen, a resultative compound can

allow an object even when both V_1 and V_2 have a single argument, i.e. are intransitive verbs, as in the example in (90).

(90)　我　　哭湿　　　了　　枕头。
　　　wǒ　*kūshī*　　*le*　*zhěntou*
　　　I　　cry-wet　ASP　pillow
　　　'I cried the pillow wet.'

Moreover, Huang & Lin (1992) observe that the event structure of the whole resultative compound is a composite of the event structures of the two verbs[58], thus they conclude that Chinese resultative compounds "involve composite instead of headed structures" (p. 91)[59].

However, Cheng & Huang (1994:217-218, fn. 4) observe that Huang & Lin (1992) are not entirely consistent in their assumption that resultative compounds are headless. Consider a sentence like the one in (91), from Huang & Lin (1992:105):

(91)　张三　　　追累　　了　李　小姐，现在　追　王　小姐。
　　　Zhāngsān　*zhuīlèi*　*le*　*Lǐ*　*xiǎojie* *xiànzài* *zhuī*　*Wáng* *xiǎojie*
　　　Zhangsan chase-tired ASP　Li　Miss　now　chase Wang miss
　　　'Zhangsan got tired of courting Miss Li; he is now courting Miss Wang.'

According to Huang & Lin (1992), this kind of sentences represent an exception to the fact that resultative compounds are headless. In a verb like 追累 *zhuīlèi* 'chase-tired', V_1 should convey the Proto-Agent role, while V_2 should convey the Proto-Patient role. However, the sentence in (91) has a subject-oriented reading, where the arguments of the two verbs are fused and identified with the external argument of the whole compound; the single argument of V_2 does not convey the Proto-Patient role but is fused with the Proto-Agent role. Huang & Lin (1992) assume that the sentence

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[58] Huang & Lin (1992) postulate that resultative compounds represent composite event structures without clearly defined logical relations between them. These structures must fit into either the Accusative Template, which, following Dowty (1991), is linked to arguments with the roles of Proto-Agent and Proto-Patient, or the Unaccusative Template, which is linked to the argument that bears the role of Proto-Patient. Moreover, they argue that either constituent of a resultative compound must contribute one argument to the whole compound and that the mapping between the selected base argument and the resultative argument is one-to-one.

[59] Cheng & Huang (1994) also observe that English resultative constructions exhibit similar transitivity properties to those found in Chinese, since the resultative construction can be transitive regardless of the transitivity of V_1, e.g. *he run the pavement thin* (cf. 5.2.1). Therefore, following Huang & Lin's (1992) assumption, it should be concluded that English resultative constructions are headless as well, a claim which would run against the fundamental assumption of syntactic theory that phrases are headed. However, Cheng & Huang (1994) observe that the issue of headedness for English resultative constructions does not even arise; V_1 is clearly the head of the construction.

in (91) involve an interpretation where the whole event denoted by V_1 is an argument of the predicate represented by V_2, thus it should be treated as a headed construction in which V_2 is the head[60]. Note that the same compound 追累 *zhuīlèi* 'chase-tired', with an object-oriented reading (cf. ex. 70a), would be considered headless by these authors. Therefore, Huang & Lin's (1992) theory seems not to be tenable.

Li (2008) makes another proposal to support the headless status of Chinese resultative compounds. Li (2008), on the assumption of the head feature percolation condition (cf. Li Y. 1990:181)[61], observes that the fact that the Causer and the Causee arguments can be realized in different ways argues against the claim that resultative compounds are headed. According to Li (2008), indeed, the fact that, in a sentence like (92), the Patient argument of V_1 is realized in the subject position of the compound and the Agent argument of V_1 is realized in the object position makes the claim that the compound is left-headed problematic.

(92)　　那　　　包　　　衣服　洗累　　　　了　　　张三。
　　　　nà　　*bāo*　*yīfu*　*xǐlèi*　　　　*le*　　　*Zhāngsān*
　　　　that　CL　　clothes wash-tired　ASP　　Zhangsan
　　　　'That bundle of clothes washed Zhangsan tired (Zhangsan washed that bundle of clothes and this made Zhangsan tired).'
　　　　(Example adapted from Li 2008:743)

When the verb 洗 *xǐ* 'wash' is used alone in an active sentence, the Patient is realized as object and the Agent as subject. Likewise, the fact that the single argument of V_2, 累 *lèi* 'tired', is realized in the object position of the compound would argue against the right-headedness of the compound as well, since this argument must appear in the subject position when the verb is used by itself. Furthermore, Li claims that the existence of sentences like the one in (92) also runs against the claim that resultative compounds are double-headed, because neither the realization of the Agent and Patient arguments of V_1 nor the realization of the single argument of V_2 is

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[60] They also consider other exceptions like 张三吃饱了饭 *Zhāngsān chībǎo le fàn* 'Zhangsan eat-full ASP rice = Zhangsan ate himself full (of rice)', where the sole argument of V_2 is fused with the Proto-Agent. According to Huang & Lin (1992), since this phenomenon is limited to a set of lexicalized idioms, it does not create problems for their account. However, it is not very clear why examples like the one above should be considered as lexicalized idioms (cf. also Cheng & Huang 1994:204 and the discussion in 6.3.2.2 above).

[61] "[...] the theta-role prominency of the head must be strictly maintained in the theta-grid of the compound".

maintained in the compound. Therefore, Li (2008) concludes that Chinese resultative compounds are headless. However, we think that trying to establish headedness on the basis of a derived causative structure (cf. 6.3.2.4) is misleading; moreover, Li's account has the same problems as other accounts relying on transitivity properties of the constituents and thematic roles discussed in the previous sections.

6.3.3.5 Our conclusion: resultative compounds are left-headed

An overview of the literature has revealed that all the logical possibilities have been argued as far as headedness of resultative compounds is concerned: left-headedness, right-headedness, double-headedness, no head.

We agree with Cheng & Huang (1994), who claim that the notion of head is a structural, and not a conceptual, notion and that it concerns the syntax of the compound. Moreover, we agree with Cheng & Huang that an analysis based on the event structure of the compound is by far more reliable than the one based on the argument structure: as we have mentioned, these authors claim that the thematic structure of a predicate is derived from its aspectual structure, which in turn reflects the left-headed nature of the compound internal structure.

In our analysis of resultative compounds we have adopted the framework proposed by Ramchand (2008), which is based on the assumption that the syntactic projection of arguments is based on event structure (cf. Jackendoff 1990, Grimshaw 1990, Travis 2000, Lin 2004, Borer 2005, among others). Ramchand's (2008) syntactic decomposition of the event structure is able to represent the complexity of an event as well as of capturing the set of core argument roles, as defined by the predicational relations at each level. The application of this analysis to Chinese resultative compounds (cf. 6.3.2) has enabled us to support Cheng & Huang's (1994) claim that resultative compounds are left-headed. In fact, the syntactic decomposition of the event structure of resultative compound makes clear that V_1 is the head of the whole compound: the two verbal roots spell-out different heads in the structure, but V_1 identifies the hierarchically superior head in the functional hierarchical structure[62].

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[62]Note that we have proposed that the causative pattern presented in 6.3.2.4 represents a derived structure mediated by a null causative head, which fills the *init* position (and force V_1 to have its feature unassociated in the case of V_1s which already have an [init] feature in their lexical entry).

We therefore conclude, on the basis of syntactic evidence, that Chinese resultative compounds are left-headed.

6.4 Other causative compounds

In this section we will introduce another kind of causative compounds, which, according to us, express indirect causation. This kind of compounds involve a limited set of V_1s, which take as their verbal complement different kinds of verbal roots, including unergative and transitive ones, and thus they are different from the resultative compounds illustrated in the previous sections. The V_1s involved in this kind of compounds are: verbs indicating a polite invitation, request or offer, e.g. 请 *qǐng* 'ask', 邀 *yāo* 'invite, request', 求 *qiú* 'ask, request'; verbs expressing advice, persuasion, e.g. 劝 *quàn* 'advice/persuade'; verbs indicating 'helping' or 'promoting', e.g. 促 *cù* 'promote', 助 *zhù* 'help'; verbs that express the forcing of someone to do something against his/her will, e.g. 逼 *bì* 'force', 迫 *pò* 'force'; verbs indicating prohibition or refuse, expressing negative causation, e.g. 禁 *jìn* 'prohibit', 拒 *jù* 'refuse' (cf. Steffen Chung 2006:174-182).

Xu (2006:128-129) observes that there is a group of verbs often used in the so-called pivotal construction (cf. 1.3.4.2.2), i.e. $NP_1 + V_1 + NP_2 + V_2$, in which V_1 is a verb with the meaning of 'to ask', 'to force', 'to request'. The whole construction has the meaning of 'to make somebody do something in a specific way'. Xu points out that this kind of construction is very common in Chinese, even though the set of possible verbs appearing as V_1 is not large, e.g. 逼 *bì* 'force', 迫 *pò* 'force', 求 *qiú* 'ask, request'. Xu further points out that these constructions can be considered as causatives in a broad sense but, differently from the 使 *shǐ* construction (cf. 3.3.3.1), they have not been grammaticalized. However, apparently these V_1s have also begun to be used as V_1 in VV compounds. Some compounds involving these roots are presented in table 2.

Table 2 – Examples of causative compounds[63]

V₁	Examples
逼 *bì* 'force'	逼嫁 *bījià* 'force + (of a woman) marry = force a woman to marry' 逼退 *bītuì* 'force + retreat = force to retreat' 逼反 *bìfǎn* 'force + revolt/rebel = force to revolt/rebel'[64] 逼走 *bīzǒu* 'force + leave = force to leave' 逼供 *bīgòng* 'extort + confess = extort a confession'
迫 *pò* 'force'	迫降 *pòxiáng* 'force + surrender = force sb. to surrender'
请 *qǐng* 'ask'	请示 *qǐngshì* 'ask + show/instruct = ask for instructions' 请教 *qǐngjiào* 'ask + teach/instruct = ask for advice'
劝 *quàn* 'advice/persuade'	劝退 *quàntuì* 'advice/persuade + quit = persuade sb. to quit/to resign from an official position' 劝募 *quànmù* 'persuade + raise/recruit = ask for contributions/solicit contributions by persuasion' 劝阻 *quànzǔ* 'advise + block/prevent = dissuade sb. from' 劝学 *quànxué* 'advice + study = exhort to receive education/encourage learning' 劝住 *quànzhù* 'advice + stop = persuade to give up/stop'
邀 *yāo* 'invite, request'	邀访 *yāofǎng* 'invite + visite = invite someone to visit' 激发 *jīfā* 'invite + emit/develop/rise = stimulate (the occurrence of)' 邀集 *yāojí* 'invite + gather = invite to assemble/invite to a gathering' 邀留 *yāoliú* 'invite + stay = invite to stop over'
求 *qiú* 'ask, request'	求饶 *qiúráo* 'ask + forgive = ask for forgiveness' 求教 *qiújiào* 'ask + teach/instruct = ask for advice' 求偿 *qiúcháng* 'ask + compensate = ask for reparation/compensation' 求借 *qiújiè* 'ask + borrow/lend = ask sb. for a loan' 求助 *qiúzhù* 'ask + help = seek help'
助 *zhù* 'help'	助长 *zhùzhǎng* 'help + grow = help to grow/encourage/foment'
禁 *jìn* 'prohibit'	禁用 *jìnyòng* 'forbid + use = forbid the use of sth.' 禁猎 *jìnliè* 'forbid + hunt = forbid hunting' 禁入 *jìnrù* 'forbid + enter = forbid the entrance'

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[63] The examples are taken from Steffen Chung (2006:174-182), the 文林 Wenlin Chinese-English Dictionary (2007[1997]) and CCD (2002).

[64] From 平原枪声 'Gunshot in a plain' by Li Xiaoming:

[...]万一	真	把	大家	逼反	了 [...]
wànyī	*zhēn*	*bǎ*	*dàjiā*	*bìfǎn*	*le*
what if	really	BA	really	force-rebel	ASP

'[...] what if (someone) really forced everybody to rebel [...]'

http://cyc6.cycnet.com:8090/minzu/rmhn/xiaoshuo/content.jsp?id=16165&pageno=4

	禁贴 *jìntiē* 'forbid + post = forbid the posting'
	禁唱 *jìnchàng* 'forbid + sing = forbid the singing of a particular song'
拒 *jù* 'refuse'	拒载 *jùzài* 'refuse + transport = (of a taxi driver, etc.) refuse to take a passenger'
	拒付 *jùfù* 'refuse + pay = refuse the payment'
	拒缴 *jùjiǎo* 'refuse + pay = refuse to pay (tax/etc.)'
	拒运 *jùyùn* 'refuse + transport = refuse to transport/carry'
催 *cuī* 'urge/press'	催缴 *cuījiǎo* 'urge/press + pay = press for payement'
	催生 *cuīshēng* 'urge/press + give birth to = hasten parturition, induce labour (by artificial mean)'

Steffen Chung (2006) terms this kind of compounds lexical causative compounds, formed by a matrix verb (V₁) and a verb complement (V₂). Steffen Chung (2006) observes that the meaning of these compounds implies that an agent of V₁ causes the agent of V₂ to do something, thus the agent of V₂ is simultaneously a patient of V₁. According to Steffen Chung, lexical causatives basically represent compressed forms of longer and more explicit phrases; their structure varies from compound to compound, depending on the expanded phrase they are derived from. However, we must remark that in some cases these compounds are formed with at least one bound root constituent, e.g. the V₁ 禁 *jìn* 'prohibit' is a bound root, which corresponds to the word 禁止 *jìnzhǐ*; the bound V₁ 拒 *jù* 'refuse' corresponds to the free form 拒绝 *jùjué*. Moreover, the aspect marker, when present, is placed after the whole compound (see the examples in 95 below), which should be regarded as a proof of the wordhood of these forms. In contrast, in a pivotal construction the aspect marker, when allowed, is placed after the head VP, i.e. the first VP, as in the examples in (93).

(93)   a. 那天　　许立宇　　邀　　了　　一些 男女　　　　　留学
　　　　nàtiān　Xǔ Lìyǔ　　yāo　le　　yīxiē nánnǚ　　　liúxuéshēng
　　　　that day Xu Liyu　　invite ASP　some men and woman　foreign student
　　　　到　他 家　一起　　　过节
　　　　dào　tā jiā　yīqǐ　　　guòjié
　　　　at　he home together　celebrate festival
　　　　'That day Xu Liyu invited some foreign students to celebrate together the festival at his place.'
　　　　(From the novel 许爷 'Master Xu', chap. 16, by Wang Shuo: http://cn.xs8.cn/ddmj/wangshuo/015.htm)

b. 我 劝　　　了 提多　　到 你们　　那里　　去 [...]
wǒ quàn　　le　Tíduō　dào nǐmen　nàlǐ　qù
I　persuade　ASP　Titus　at　you　that place　go
'I persuaded Titus to go to you [...]'
(From the Chinese Bible, 歌林多后书 'Second Corinthias' or 'The Second Epistle to the Corinthias' 12:18; http://holybible.com.cn/2_corinthians/12-18.htm)

According to us, the compounds in table 2 should be set apart from the pivotal constructions in (93), even though they share the same order of verbal roots and can convey the same kind of meaning.

We believe that the compounds in table 2 convey indirect causation (which is generally expressed through periphrastic means in Chinese). The function of V_1 seems to be similar to that of the so-called curative affixes mentioned in 2.2, e.g. Finnish *-pt (a)* 'ask to' in Finnish. As we have seen, Kulikov (2001) points out that few languages, e.g. Naukan Eskimo, distinguish between different types of indirect causation by means of different affixes: *njka-*, *-sihjka-* 'ask to do something'; *-hjqur (a)-* 'order to do something'; *-hjqusar (a)-* 'persuade to do something' (cf. Manovščikov & Xrakovskij 1970). The roots listed in table 2 seem to have the same role as this kind of causative affixes.

In 2.3, we have shown that L&RH (1999) suggest that the primitive for direct causation is the absence of an intervening event in the causal chain between the causing and the result subevents, which in some cases is equivalent to temporal contiguity. Direct causation presupposes that there is no force, other than the initiator, which is the most immediate source of energy in the effect event (cf. also Wolff 2003), and that the caused event cannot have autonomy (cf. Shibatani & Pardeshi 2002, among others). We have seen that, in the case of resultative compounds, V_2 should be able to be conceived as externally caused, thus internally caused verbs (with the few exceptions seen above) are not allowed. In contrast, verbs like those in table 2 seem to take as V_2 internally caused verbs (we will return on this issue later on). This implies that the caused event can have some degree of autonomy. The different degree of the causee's control is determined by V_1; following Li F.X. (1991), we represent this difference in the degree of control in a continuum from causer

controlled causatives to causee controlled causatives (cf. 2.3)[65], determined by the kind of root in V₁ position:

(94) COERCIVE >DIRECTIVE > IMPERATIVE > ASSISTIVE > PERMISSIVE
 逼 *bì*   催 *cuī*   请 *qǐng* 'ask'[66] 助 *zhù* 'help' 求 *qiú*
 'force'   'urge, press for' 劝 *quàn* 'persuade'   'ask, request'[67]
 迫 *pò*
 'force'

Along the continuum, coercive meaning is closer to direct causation, since the causee has a lower degree of control; going towards the right end of the continuum the degree of causee's control increases.

In (95) some examples of the use of such compounds are presented:

(95) a. 她们 逼退   了 桂 长林   那   一   队 […]
      tāmen *bìtuì*   *le* *Guì Chánglín* *nà* *yī* *duì*
      they force-retreat ASP Gui Changlin that one group
      'They forced the group of Gui Changlin to retreat.'
      (From the PKU corpus)

   b. 她 从来 不 上门   来 催缴   房租
      tā *cónglái bù* *shàngmén lái* *cuījiǎo fángzū*
      she never not visit   come urge-pay rent
      'She never came to urge the payment of the rent.'
      (From the PKU corpus)

   c. […] 她 决   不 相信   丈夫   会 反党,   结果
      tā jué   *bù xiāngxìn zhàngfu huì fǎndǎng*   *jiéguǒ*
      she definitely not believe husband can oppose to the CCP result
      她   被 党组织   劝退   了
      tā *bèi dǎngzǔzhī*   *quàntuì*   *le*
      she PASS CP organization persuade-quit ASP
      '[…] She definitely did not believe that her husband could be an opponent
      of the party, and she was persuaded to retire by the CP organization.'
      (From the PKU corpus)

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[65] Recall that in English, the different degree of control can be expressed by various verbs (e.g. *force > order > tell > help > permit*), while in many languages the degree of control is encoded in the case marking on the causee (cf. 2.3).

[66] As we have mentioned, the verb 请 *qǐng* 'ask/request' expresses polite invitation or request (cf. Steffen Chung 2006). Moreover, it can also be used in permissive causation (cf. fn. 67 below).

[67] The verb 求 *qiú* 'ask' can be used as an imperative as well as a permissive, e.g. 求见 *qiújiàn* 'ask + see = ask to see', 求降 *qiúxiáng* 'ask + surrender = to beg to be allowed to surrender' (cf. Steffen Chung 2006:178-179). The verb 请 *qǐng* 'ask/request' as well can be used as a permissive, e.g. 请调 *qǐngdiào* 'request + transfer = request to be transferred', 请辞 *qǐngcí* 'request + resign = request permission to resign' (cf. Steffen Chung 2006:176-177).

d. 你 的 妥协 更 助长 了 他 的 霸气
nǐ de tuǒxié gèng zhùzhǎng le tā de bàqì
you DE compromise even more help-grow ASP he DE aggressiveness
'Your compromise encouraged even more his aggressiveness'
(From the Nciku dictionary:
http://www.nciku.com/search/zh/detail/%E5%8A%A9%E9%95%BF/56431)

e. 我[…]想 最后 请教 你 一 个 其实 满 无聊 的 问题
wǒ xiǎng zuìhòu qǐngjiào nǐ yī ge qíshí mǎn wúliáo de wèntí
I want last ask-teach you one CL actually full bored DE problem
'I […] finally would like to solicit your views on what is actually a rather silly question.'
(Adapted from Steffen Chung 2006:176)

f. 一些 公共电汽车 拒载 持 月票 乘客
yīxiē gōnggòngdiànqìchē jùzài chí yuèpiào chéngkè
some trolley bus refuse-carry hold monthly ticket passenger
'Some trolley buses refuse to carry passengers holding monthly tickets.'
(From the PKU corpus)

g. 伊拉克人 也 没有 求助 美国 的 帮助 更迭 萨达姆
Yīlākèrén yě méiyǒu qiúzhù Měiguó de bāngzhù gēngdié Sàdámǔ
Irak-people also not ask-help USA DE help change Saddam
政权。
zhèngquán
regime
'Iraqi people did not seek help from the USA to change Saddam's regime.'
(From the PKU corpus)

h. […] 因此 广东 禁用 这 种 渔具。
yīncǐ Guǎngdōng jīnyòng zhè zhǒng yújù
therefore Guangdong prohibit-use this CL fishing tackle
'[…] Therefore, Guandong prohibits the use of this kind of fishing tackle.'
(From the PKU corpus)

i. 外交部 积极 邀访 外宾 参加 520
Wàijiāobù jījí yāofǎng wàibīn cānjiā wǔershí
Foreign Ministry active invite-visit foreign visitor join May 20th
'The Ministry of Foreign Affairs is actively inviting foreign visitors to attend the May 20th (inauguration)'
(Adapted from Steffen Chung 2006:179)

In the light of the above, we assume that these compounds express indirect causation and are an alternative way to periphrastic means. We will provide a tentative analysis for them in the next section.

6.4.1 An analysis of indirect causative compounds

In the previous section, we have introduced the issue of compounds expressing indirect causation. In this section we will make an attempt to provide an analysis of this kind of compounds adopting Ramchand's (2008) framework.

What has emerged from the description in the previous section is that most of the V₂s occurring in compounds expressing indirect causation usually already have an [init] feature in their lexical entry. Some unaccusative verbs seem to be able to occur as V₂ as well; however these V₂s generally seem to be either internally caused verbs of change of state, e.g. 长 *zhǎng* 'grow' (cf. 4.2.4), as in 助长 *zhùzhǎng* 'help + grow = help to grow/encourage/foment', or inherently directed motion verbs, like 走 *zǒu* 'leave, escape' (e.g. 逼走 *bīzǒu* 'force-leave = force sb. to leave/expel'), which are verbs that show a peculiar behaviour: they can be used either agentively or non-agentively, but nevertheless they always show unaccusative behaviour (cf. 4.2; L&RH 1995).

If we consider these V₁s to act in a similar way as suffixes expressing indirect causation in other languages, we should assume that they identify *init* and *proc*, forcing V₂ to identify the *res* projection head. Ramchand (2008) proposes an analysis for indirect causatives in Hindi/Urdu; in 2.2, we have shown that this language has two causative affixes: the *-aa* suffix, expressing direct causation, and the *-vaa* (*-v + -aa*) suffix, expressing indirect causation (c.f. Saksena 1982b, Butt 1998, Schmidt 1999, Ramchand 2008). Apparently the two suffixes are able to attach to the same kind of roots[68] (cf. Ramchand 2008). According to Schmidt (1999:171), sometimes there is not much difference between indirect causatives and direct causatives. For example, the causative *sil<u>aa</u>naa* and *sil<u>vaa</u>naa* both mean 'to get (something)

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[68] With unergative verbs, it is not clear whether the initiational interpretation on the original subject is actually retained when the verb is transitivized using the *-aa* suffix, since selectional restrictions on the object of these transitives seem to require a participant that is inanimate, or explicitly controllable (cf. Ramchand 2008:159)

a. *Anjali*   *patang/*?chiṛiyaa*   *uṛaa rahii*   *hai*
Anjali   kite/   bird   fly   PROG.F   be.PRES.SG
'Anjali is flying a kite/* a bird.'

Moreover, the *-aa* suffix also seems to be able to attach to the transitives found in the vowel-alternating class of verbs (cf. Ramchand 2008:155). However, Ramchand points out that it is quite difficult to tell whether the *-aa* suffix is attaching to the transitive or the intransitive alternant because vowel shortening obscures the length of the root vowel (cf. also chapter 2, fn. 15). No additional argument is present with respect to the transitive alternant. With one small class of transitive verbs (ingestive verbs, i.e. verbs with a Path object) causativization with *-aa* is possible with the addition of an argument, to create a derived 'ditransitive' (no instrumental argument is possible, cf. Ramchand 2008:161):

b. *Anjum-ne Saddaf-ko/*se*   *khaanaa*   *khil-aa-yaa*
Anjum-erg Saddaf-ACC/*INSTR food   eat-*aa*-PERF.M.SG
'Anjum fed Saddaf food.'

Ramchand observes that, interestingly, the paraphrase of the sentence in (b) does not mean 'Anjum caused Saddaf to eat food', it must mean that 'Anjum *fed* Saddaf, directly affecting her in doing so'. Therefore, apparently causativization with –*aa* requires verbs that can be conceived as being externally caused.

stitched'. In other cases, there is a clear difference, e.g. *ḍubaanaa* 'to sink something', 'to let or make sink' vs. *ḍubvaanaa* 'to have (someone) sink something'.

According to Ramchand (2008), it may be possible to analyse the suffix *-vaa* as *-v* + *-aa*, where *-aa* identifies *res*, while *-v* identifies *proc*, and the two specifier positions are identified, giving rise to a single Undergoer-Initiator argument. The root, in turn, fills the *res* head and encyclopedically identifies the final result attained by the resultee, i.e. the non-causer argument. Any verb root that combines with this suffix must leave some of its own category features unassociated.

Another possible way to look at the suffix *-vaa* is to assume that it is a morpheme which possesses both [init] and [proc] features. Being a lexical item, according to Ramchand (2008), it is possible to assume that it carries its own (fairly impoverished) lexical-encyclopedic content in identifying the *init* and *proc* subevents: this lexical content is possibly associated with active volitional causation. Since the suffix fills both *init* and *proc*, when unergative and transitive roots combine with the suffix *-vaa*, the root is forced to identify the *res* subevent, as it is shown in (96).

(96) a. *Anjum-ne   Saddaf-ko   hãs-vaa-yaa*
      Anjum-ERG   Saddaf-ACC   laugh-*vaa*-PERF.M.SG
      'Anjum made Saddaf laugh (by means of the clown)'
      (From Ramchand 2008:178)

b.
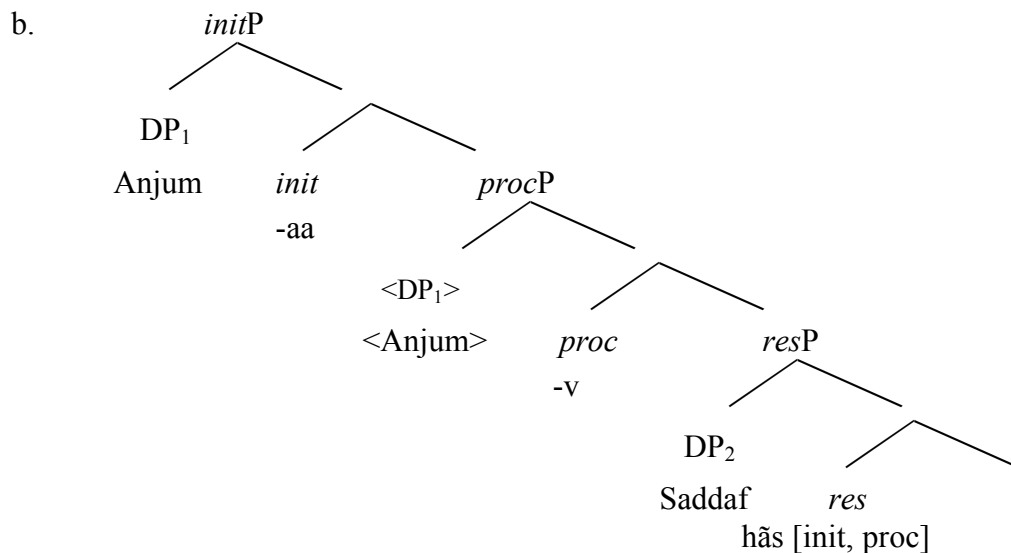
The event represented in (96b) can be expressed as 'DP$_1$ initiates and undergoes some process so as to bring about the result of DP$_2$ laughing (DP$_1$ had/made DP$_2$ burst into laughter)' (cf. Ramchand 2008:179).

Ramchand (2008:179) observes that in the case of the unergative root *hãs* 'laugh', the selectional restrictions on the object found when the verb is causativized by means of the *-vaa* suffix are less than those found when the verb is causativized through the *-aa* suffix. According to Ramchand, this is due to the fact that in the latter case, the object is the Undergoer of the laughing process, which is somehow initiated by the subject, and thus must be conceived as directly controllable. In contrast, with the *-vaa* causative, no such direct relation exists, since the process initiated by the subject is not the laughing process itself: the causation is indirect, and thus consistent with actions like persuasion or a deliberate effort to be amusing.

Curative affixes in other languages, such as those mentioned in the previous section (cf. also 2.2) could be analysed in the same way. For example, in Naukan Eskimo the *suffixes njka-*, *-sihjka-* 'ask to do something', *-hjqur (a)-* 'order to do something', *-hjqusar (a)-* 'persuade to do something' can be considered as [init, proc] items; when these suffixes attach to a verbal root, they force the root to leave some of its features unassociated. However, the lexical-encyclopedic content carried by the root is richer than in the case of the *-vaa* suffix in Hindi/Urdu, giving rise to subtle differences in the kind of indirect causation conveyed and in the degree of autonomy of the caused subevent.

The Chinese compounds we are considering here (cf. table 2), could be seen on a par with this kind of affixes. It can be supposed that the V_1s of these compounds fill both the *init* and the *proc* projections, licensing a single Initiator-Undergoer. The V_2s, in turn, are forced to identify the *res* projection. Being a verbal root, V_1 carries a specifical lexical-encyclopedical content (which in any case conveys the meaning of active volitional causation), thus different V_1s would result in different degrees of control of the causee and of autonomy of the caused subevents, just like in the case of the curative affixes seen above. In (97b) is represented the possible structure of the compound 逼退 *bìtuì* 'force-retire = force to retire'.

(97) a. 她们   逼退   了 桂长林   那   一   队   […] (cf. 95a)
      tāmen bìtuì   le Guì Chánglín nà   yī   duì
      they   force-retreat ASP Gui Changlin that   one   group
      'They forced the group of Gui Changlin to retreat.'

b.

```
                    initP
                   /    \
     她们 tāmen 'they'     \
                      init    procP
                    逼 bì 'force'  /    \
                      < 她们 tāmen 'they'>   \
                                    proc      resP
                                <逼 bì 'force'>  /    \
                桂长林那一队 Guì Chánglín nà yī duì     \
                   'the group of Gui Changlin'    res
                                              退 tuì 'retreat'
                                                [init, proc]
```
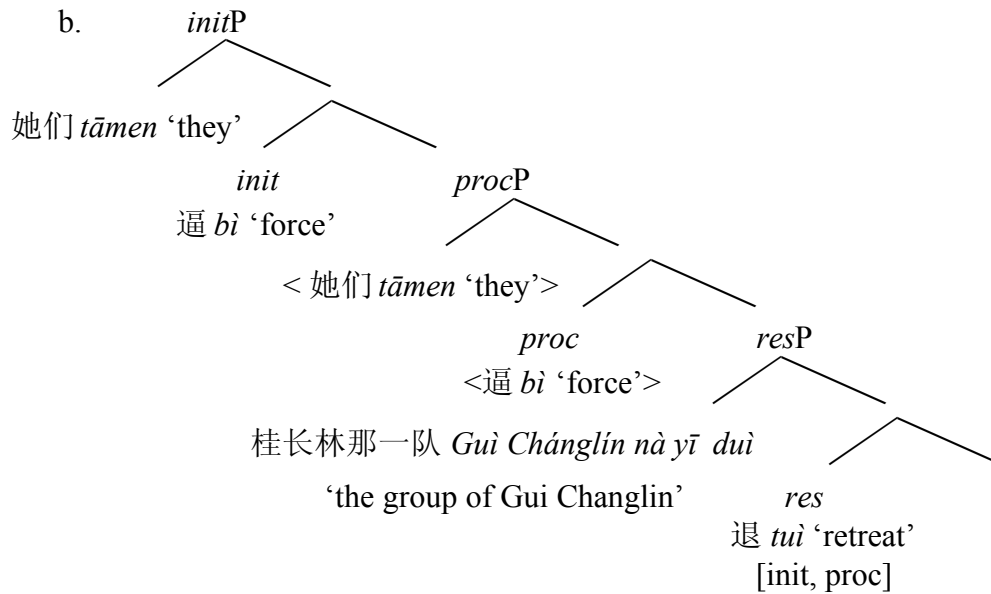
The causative semantics provided by this structure could be expressed, in line with the Hindi/Urdu example in (96) above, as 'DP$_1$ initiates and undergoes the process of forcing so as to bring about the result of DP$_2$ retreating'. The kind of active volitional causation is the same; however, the verbal root (V$_1$) conveys its specific lexical-encyclopedical content to the causing subevent (cf. 'DP$_1$ has DP$_2$ to do something' vs. 'DP$_1$ forces DP$_2$ to do something' vs. 'DP$_1$ advices DP$_2$ to do something', etc.). In this kind of causativization, the deliberateness and volitionality of the causer are emphasized.

In Chinese compounds expressing indirect causation, as in the case of resultative compounds, the two verbal roots identify different "pieces" of the event structure. Moreover, in both kinds of compounds the two constituents share a causative relation. According to Ramchand (2008), indirect causation in the case of -*vaa* suffixed verbs in Hindi/Urdu arises from the fact that the verbal root identifies only *res*, while the suffix identifies both *init* and *proc*: the fact that *proc* and *res* are identified by two different items would give rise to indirect causation. In fact, according to Ramchand, the semantics of indirect causation is correlated with the potential lack of temporal dependence between the subevents: the subevents are causally related while being temporally and lexical distinct, giving rise to the inference of an intermediary. According to this view, indirect causation occurs whenever the morpheme identifying the *proc* head is lexically distinct from the morpheme identifying *res*. This would

mean that most resultative compounds involve indirect causation, since the *proc* and the *res* head are identified by distinct morphemes. However, we have argued that this does not seem to be the case; we have seen that direct causation does not necessarily imply temporal contiguity (cf. RH&L 2001; 2.3 and 5.2.3). In fact, even the two causally related subevents involved in a lexical causative do not need to be temporally dependent (cf. RH&L 2001:783). As we have already pointed out, L&RH (1999:33) suggest that the primitive for direct causation is not the temporal dependence between the subevents, but rather the absence in the causal chain of an intervening event between the causing and the result subevent, which in some cases is equivalent to temporal contiguity. Moreover, Wolff (2003) claims that direct causation arises when there are no intermediate entities at the same level of granularity as either the initial causer or final causee or, if an intermediate entity is present, it can be construed as an enabling condition rather than an intervening causer (cf. 2.3 and 6.3.2.5). In the case of the indirect causative compounds considered in this section, the intermediate entity present should be regarded as an intervening causer, giving rise to indirect causation.

Therefore, we do not agree with Ramchand's (2008) point, namely that indirect causation occurs whenever the morpheme identifying the *proc* head is lexically distinct from the morpheme identifying *res*; apparently, it depends on the nature of the verbal roots involved in the construction of the causative event. However, this topic deserves further investigation and we will leave it for further research.

6.5 Concluding remarks

In this chapter we have made an attempt to analyse Chinese resultative compounds based on their event structure, adopting Ramchand's (2008) framework. We have first provided a review of the main proposals for the analysis of Chinese resultative compounds found in the literature. We have then illustrated Ramchand's (2008) and other related proposals (cf. Son & Svenonius 2008, Son 2008) on the English resultative construction and we have tried to apply this kind of approach to Chinese resultative compounds, where the two verbal constituents are seen as the spell-out of different heads in the complex event structure.

The analysis of Chinese resultative compounds based on this kind of syntactic decomposition of the event structure apparently enables us to overcome difficulties which arise from approaches based on the argument structures and problems related

to theta-roles. This approach, as we have seen, is also able to reconcile the small clause (e.g. Hoekstra 1988, 1992; for Chinese, Sybesma 1999) and the complex predicate approaches (e.g. Johnson 1991, Neeleman 1994; for Chinese, Huang 1992), since it presents additional predicational structure associated with the result phrase, as in the small-clause approach, but at the same time represents a complex decomposed predicate, where the subevents are combined to form a single complex event and are related to a causative 'leads-to' relation (cf. Ramchand 2008). Adopting this approach has also the advantage to analyse resultative and other causative compounds in a functional structure that is supposed to be universal: the fundamental building blocks of eventive meaning are assumed to be the same for all languages and languages vary only in the kind of lexical items available in their lexical inventory, which determine differences in the way of expressing the very same structures (cf. Ramchand 2008, Son & Svenonius 2008).

This kind of syntactic decomposition of the event structure has also enabled us to support the position that resultative compounds are left-headed due to structural reasons, along the line proposed by Cheng & Huang (1994), helping to solve the very debated question of the position of the head in such compounds.

Lastly, we have addressed the issue of another kind of causative compounds which, according to us, express indirect causation. The set of possible V_1s that can occur in this kind of compounds is quite restricted; depending on the kind of V_1 occurring in the compound, different degrees of autonomy of the caused event are allowed.

7. Conclusions

In this thesis, we have argued that left-headed verbal compounds represent an alternative (analytic) strategy to express causativity in Mandarin Chinese, after the loss of other morphological and phonological strategies. We have analysed three types of causative compounds, for which we have provided a syntactic decomposition of the event structure adopting the framework put forth by Ramchand (2008).

After an introduction of the theoretical background of our research and of some historical data on the expression of causativity in Chinese, we have considered the issue of the causative alternation by means of phonetically realized light verbs (chapter 4), e.g. 弄 *nòng* 'make', 打 *dǎ* 'hit', 搞 *gǎo* 'do', 加 *jiā* 'add; increase'. We have shown that Mandarin Chinese possesses few lexical causatives (labile verbs), possibly relics of previous stages of the language; moreover, even when lexical causatives are available, complex verbs are preferred as means to express causativity. We have argued that the causative alternation may be expressed by means of a light V_1: adopting the 'first phase syntax' framework (Ramchand 2008), the phonetically realized light verbs have been considered to be *init* heads with semantics of general causation, which build an extra-layer on top of verbs lacking an [init] feature in their lexical entry, through a process of structure building. In arguing for this process of causativization, we have followed Ramchand's (2008) proposal, according to which the causative alternation in English is the result of automatic structure building mediated by a null *init* head; in Chinese, the causative light verb would have the same role as the null causative *init* head in English.

Among the light verbs we have considered in our analysis, we have seen that 弄 *nòng* 'make' generally seems to be able to causativize any verb lacking an [init] feature. In contrast, 打 *dǎ* 'hit' seems to be more constrained, probably due to its wide use in the language as a verbal root with the meaning of 'hit, strike'; when it occurs as V_1 in [V V] compounds, this root is often ambiguous between being a light verb or a full verb forming a "normal" resultative compound. We have then focussed our attention on the root 打 *dǎ*, arguing that its use as a light verb derives from its 'make' meaning. We have shown the diachronic development of the meanings and functions

of 打 *dǎ* 'hit' and we have compared it to similar roots in other two Sinitic languages, i.e. Taiwanese Southern Min 拍 *phah4* and Hakka 打 *da2*, which apparently have the same causativizing function as Mandarin 打 *dǎ* 'hit'.

We have also proposed an analysis of the root 加 *jiā* 'add; increase' as a light verb, which, to the best of our knowledge, has never been treated as such in the literature. We have seen that the use of this light verb is more restricted; specifically, we have proposed that it is a causative head involved only in the formation of transitive deadjectival verbs based on open-range adjectives, in particular those involving an increase in the property denoted by the adjective. Besides contributing an extra-layer to intransitive deadjectival verbs (items specified for both adjectival and verbal features, cf. 4.3), this root seems also to be the overt realization of one of the parts involved in the logical representation of degree achievement verbs, i.e. the increasing event (cf. Hay, Kennedy & Levin 1999). Interestingly, we have seen that Chinese deadjectival verbs denoting a decrease in some property, in their transitive form, require a V_1 that marks the negative direction, e.g. 减 *jiǎn* 'decrease, subtract' and 缩 *suō* 'shrink'.

Furthermore, we have compared this kind of causative verbs to verbs formed with the suffix 化 *-huà* '-ize, -ify, -en' (e.g. 现代化 *xiàndàihuà* 'modernise'), apparently a productive pattern of word formation in Chinese. In particular, we have focused on deadjectival verbs formed with 化 *-huà* (e.g. 软化 *ruǎnhuà* 'soft + SUFF = soften', 美化 *měihuà* 'beautiful + SUFF = beautify'), and we have proposed that this suffix possesses [init, proc] features and that it can form verbs from nouns and adjectives through a process of incorporation of the noun or adjective in the complement position of *proc*P into the head. Therefore, the suffix 化 *-huà* is not an *init* head as in the case of causative light verbs. We have also highlighted that, due to structural reasons, [V V] compounds formed with a light verb are left-headed, since the light verb spells out the *init* head, while verbs suffixed with 化 *–huà* are, as expected, right-headed.

The discussion on causative light verbs in Mandarin Chinese (and also in other Sinitic languages, such as Taiwanese Southern Min and Hakka) supports the causativizing (or transitivizing) analysis vs. the decausativizing analysis (cf. Levin & Rappaport Hovav 1995, Chierchia 2004 [1989], Reinhart 2002), since the presence of

the light verb makes explicit the presence of an *init* layer, as said before. Verbs formed by means of causative light verbs form causative pairs with their corresponding simplex inchoative verbs; light verbs mark the transitive variant, which thus is formally more complex, making clear the direction of the derivation, i.e. from inchoative to causative.

We have then considered the much discussed issue of resultative compounds (chapters 5 and 6), which apparently arose as an alternative causative strategy after the loss of other means to express causativity in Chinese, following to the typological shift undergone by this language. We have set a comparison between this kind of compounds and the English resultative constructions, stressing the differences in terms of behaviour and constraints: Chinese resultative compounds seem to be richer in variety than English resultative constructions and are, also, less constrained. The V_2s that can appear in resultative compounds are almost the same kind of roots found in the causative alternation by means of a light V_1. With the exception of verbs like 懂 *dǒng* 'understand' or 会 *huì* 'know', which are stative verbs, only change of state verbs (i.e. verbs lacking an [init] feature in their lexical entry), mainly externally caused ones, can appear as V_2s in resultative compounds. Also, unergative verbs like like 哭 *kū* 'cry' and 笑 *xiào* 'laugh' may appear as V_2s in resultative compounds, since they can be conceived as being directly (externally) caused. We have assumed that resultative compounds express the same kind of causation as the causative alternation, i.e. direct causation, the difference being that in resultative compounds the nature of the causing event is fully expressed by the left-hand verbal root, specifying the kind of action which brings about the change of state, while in transitive verbs formed with a light V_1 the causing event is spelled out by the left-hand verbal root, which just provides an [init] feature to the event. In the latter case, many different actions can bring about the resultant state expressed by V_2, much as in the case of English causatives, e.g. *break*.

The analysis of resultative compounds based on the kind of syntactic decomposition of the event structure proposed by Ramchand (2008) has highlighted the advantages of an approach based on the event structure rather than on the transitivity properties of the constituents (cf. Cheng & Huang 1994). Moreover, such analysis allows us to decompose the event according to a functional structure that is

supposed to be universal, since the fundamental building blocks of eventive meaning are supposed to be the same cross-linguistically (cf. Ramchand 2008, Son & Svenonius 2008, Son 2008). This approach has also allowed to overcome the limits of those approaches that need to stipulate particular rules or special mechanisms to account for the characteristics of resultative compounds.

Furthermore, the decomposition of the event structure based on a hierarchical functional structure has also enabled us to defend the position that resultative compounds are left-headed due to structural reasons. In fact, assuming a structural notion of headedness, it is clear that V_1 acts as the head of the compound: the two constituents of a resultative compound spell out different heads in a functional hierarchical structure characterized by causal embedding; nevertheless, it is V_1 which identifies the hierarchically superior head in the structure.

Lastly, we have considered another kind of left-headed causative compounds (chapter 6), which, to the best of our knowledge, have not received much attention in the literature. We have proposed a tentative analysis of this kind of compounds, which, according to us, express indirect causation. Differently from resultative compounds and causative verbs with a light V_1, these compounds allow a certain degree of autonomy of the caused event, which varies according to the kind of V_1 involved. The set of possible roots occurring in this kind of compounds is quite restricted, e.g. 请 *qǐng* 'ask', 邀 *yāo* 'invite, request', 求 *qiú* 'ask, request', 劝 *quàn* 'advice/persuade', 促 *cù* 'promote', 助 *zhù* 'help', 逼 *bī* 'force', 迫 *pò* 'force', 禁 *jìn* 'prohibit', 拒 *jù* 'refuse'. Some of these items are apparently very similar to curative affixes in some languages (cf. 2.2).

The analysis of causative compounds in Chinese has given clear evidence in favour of the event decomposition account. Moreover, the behaviour of Chinese left-headed compounds, considered also from a cross-linguistic and diachronic perspective, supports Ramchand's (2008) claim that the fundamental building blocks of the eventive meaning are the same for all languages, and languages vary only in the "size" of their lexical items: thus, the very same syntactic structures can be expressed lexically, synthetically or analytically, depending on the language and on the particular lexical items in its inventory (cf. also Son & Svenonius 2008 and Son 2008). For example, English consistently expresses complex event structures lexically, by

means of labile verbs (chapter 2). In contrast, other languages, as for example Hindi/Urdu (cf. 2.2), make use of affixes which identify pieces of the event structure. Also, some languages can choose to express complex event structures analytically by means of different lexical roots, as in the case of Chinese left-headed compound verbs.

Given these remarks, it does not come as a surprise that an analytic language like Modern Chinese prefers to express complex event structures through compounding, which is also its most productive means of word formation. This is even clearer if we consider Modern Chinese in relation to the previous stages of the language, where, as we have seen (chapter 3), complex event structures were expressed through lexical, morphological and phonological means. After the great changes which occurred in the language, Chinese began to develop alternative strategies to express complex event structures and, in Middle Chinese, resultative constructions (and, then, resultative compounds) arose. A further investigation of causative strategies in other Sinitic languages could provide further insights, revealing if the choice of different strategies for causativization is connected to the peculiar properties of single languages.

Our analysis of Chinese causative compounds has provided evidence of the fact that left-headed compounds in Mandarin Chinese are characterized by an underlying hierarchical functional structure, in which the two constituents represent the spell-out of different heads; the structure guides the interpretation of the compound. Moreover, the analysis of the data has shown that the possible combinations of roots that can give rise to left-headed structures are quite restricted. Therefore, the interpretation of a left-headed [V V] compound may be predicted from the kind of constituents involved and from their linear order, which, as we have seen, seems to follow the hierarchical order in the functional structure. Consequently, contra Chen C. (2008), we do not assume that any given [V V] compound can be freely interpreted as a coordinate, verb-complement or modifier-head structure, neither that the interpretation is generally context-driven. At least for left-headed compounds, the interpretation seems to be predictable. Nevertheless, for other kinds of [V V] compounds a certain degree of ambiguity in the interpretation admittedly may hold and this could be due to the absence of an underlying functional structure, able to guide the interpretation. A question remains: what kind of structures should be assumed for [V V] compounds other than left-headed ones? One hypothesis could be that Chinese right-headed compounds, both nominal and verbal ones, are formed by a

process of adjunction. What about double-headed compounds? Such issues deserve further research.

7.1 Hints for further research

The analysis based on the syntactic decomposition of the event structure could be extended to other kinds of verbal compounds, which, to the best of our knowledge, have not received much attention in the literature. For example, there are other kinds of compound verbs which we assume to be left-headed, i.e. verbs in which V$_1$ seems to convey various kinds of aspectual meanings (cf. Steffen Chung 2006 for an overview), as e.g. inceptive aspect for 起 *qǐ* 'start'.

(1)   a. 飞机   起飞   了。
          fēijī   *qǐfēi*   *le*
          airplain   start-fly   ASP
          'The plane took off.'
          (From the Nciku dictionary:
          http://www.nciku.com/search/zh/detail/%E8%B5%B7%E9%A3%9E/1311
          763)
    b. 枪   一   响，   赛跑 运动员   就   起跑   了
          qiāng yī   *xiǎng sàipǎo yùndòngyuán jiù*   *qǐpǎo*   *le*
          gun   one   sound race   athlete   then   start-run   ASP
          'The athletes started to run as the gun shot.'
          (From the Nciku dictionary:
          http://www.nciku.com/search/all/examples/%E8%B5%B7%E8%B7%91)

This is reminiscent of a type of complex verbs with a light verb component in Hindi/Urdu (cf. Butt & Ramchand 2005). Butt & Ramchand assume that the light verb in these constructions instantiates a 'little *v*' head, which introduces the causing event, but no explicit causer. In fact, these constructions end up having 'inceptive' semantics, where the main sub-event comes into being with the external cause remaining unspecified. The aspectual verb in *v* is consistent with the general semantics of causation, and also provides more specific lexical semantics, that of inception. Butt & Ramchand (2005:143) hypothesise that, due to Saussurean arbitrariness, there is nothing in principle which limits how specific the semantics of the light verb instantiating *v* can be; the only constraint is that the light verb should express some sort of mode of causation. It is important to remark that in Hindi/Urdu these complex verbs are right-headed (vs. Chinese, left-headed), consistently with the head-final typological characterization of the language.

Another kind of compounds which we have set apart and would need further investigation are the so-called 'phase-complement' compounds (cf. chapter 5), e.g. 找到 *zhǎodào* 'search-arrive/up to = find', 写完 *xiěwán* 'write-finish = finish writing', 拿起 *náqǐ* hold-rise/start/up = pick up'. In this kind of compounds, as we have seen, V$_1$ is usually a [init, proc] verb, while V$_2$ can be chosen among a restricted set of verbal roots (e.g. 到 *dào* 'arrive'; 完 *wán* 'finish'; 好 *hǎo* 'be good'; 住 *zhù* 'hold on'; 见 *jiàn* 'perceive'), which seem to have undergone bleaching of meaning in these contexts; they provide a *res* feature to the event structure. Some authors (cf. Starosta et al. 1998) consider these V$_2$ as suffixes, heads of the complex verbs. At a first sight, these compounds seem similar to verb-particle constructions in other languages (as, for example, English and German), to lexical prefixes in Russian (cf. Ramchand 2008:138-142) or to completive complex predicates in Hindi/Urdu. Lin (2004) proposes that the function of V$_2$ in these verbs is to convey telicity of the event, implying completion of the event in the relevant sense; they provide little semantic content and, primarily, delimit events. Further research is needed in order to give a proper account of such structures.

Furthermore, Steffen Chung (2006) has observed a particular types of causative [V V] compounds, which she terms 'passive-causatives'; some examples in Mandarin Chinese are 付印 *fùyìn* 'hand over + print = send to be printed', 送修 *sòngxiū* 'send + repair = send sth. to be repaired' (cf. Steffen Chung 2006:183).

An analysis of the structure of these compounds in terms of complex event structure and a cross-linguistic comparison of the ways of expressing the same kind of meaning could give important insights for testing some tentative hypotheses illustrated in this work.

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Baxter-Sagart Old Chinese reconstructions:
http://sitemaker.umich.edu/wbaxter/old_chinese_reconstructions

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