

FROM D TO T – DETERMINER INCORPORATION
AND THE CREATION OF TENSE

Investigating the *shi-de* cleft construction in northern dialects of Mandarin Chinese, this paper argues for the novel ongoing creation of a new past tense morpheme from the incorporation of a D⁰ element (*de*) into the verb. The re-analysis is pragmatically suggested to result from the strengthening of a past time conversational implicature commonly associated with the *shi-de* construction, and syntactically to constitute an example of ‘lateral grammaticalization’, a process in which a functional head from one domain (e.g., the DP) may under certain circumstances undergo re-interpretation as an essentially equivalent functional head in a second domain (e.g., the CP/clausal domain). The analysis proposed resolves certain apparent contradictions in the positioning and interpretation of objects, adverbs, and *wh*-adjuncts in *shi-de* forms, and results in the conclusion that speakers actually maintain a dual analysis of *de* as either a D⁰ or a T⁰ depending on the temporal orientation of the *shi-de* form.

1. INTRODUCTION

This paper sets out to investigate the syntactic and categorial status of the element *de* found in clause-final position in Mandarin Chinese cleft-type sentences such as (1), and also attempts to account for the alternation found in northern dialects where the object optionally appears positioned after *de* as in (2):

- (1) wo shi zuotian mai piao de.
I BE yesterday buy ticket DE
‘It was yesterday that I bought the ticket.’
- (2) wo shi zuotian mai de piao.
I BE yesterday buy DE ticket
‘It was yesterday that I bought the ticket.’

Structures such as (1) have been the subject of a number of pieces of research in recent years, e.g., Chiu (1993), Huang (1982), Shi (1994), among many others. There and elsewhere it is noted that *shi-de* sentences consistently give rise to interpretations similar to English clefts, with the focused element commonly following the copula *shi* and frequently being an adverb or PP referring to the time or place where some event has occurred, as for example in (3):¹



- (3) ta shi zai Zhongguo xue Yingwen de.
 he BE in China study English DE
 'It was in China that he studied English.'

Most research on the *shi-de* construction has centered on the focus properties of such sentences and has attempted to offer accounts of how the focus interpretation may be syntactically encoded. In general this has led to a concentration on the function of *shi* and various suggestions that LF movement of the focus may be involved.² Comparatively little attention has, however, been given to the role and status of the element *de* in the construction, possibly due to the fact that *de* may sometimes seem to be optional in its occurrence, and to date there has not been any serious discussion of the alternation illustrated in (1) and (2). Such apparently optional occurrence of the object either before or after *de* is puzzling, as there is no obvious interpretative difference triggering the alternation and purely optional, unmotivated movement should not occur under current Minimalist assumptions. This paper suggests that a study of the role played by *de* and the alternation found in examples such as (1) and (2) leads to a better understanding of the *shi-de* construction and the interesting conclusion that *de* is currently undergoing a significant re-analysis. It is argued that *de* is changing category from an original source as a D⁰ element to become a new past tense instantiation of T⁰, and that the reason for such a shift is in large part the increase of a past time conversational implicature strongly present in *shi-de* forms. Syntactically, such D-to-T conversion is suggested to be an example of 'lateral grammaticalization', a process in which a functional head from one type of syntactic domain may under appropriate circumstances undergo re-interpretation as an equivalent functional head in a second domain, D and T here both being elements which (potentially) assign deictic reference to their complements and therefore having largely corresponding functions in the nominal and clausal domains. The paper also presents evidence suggesting that *de* is actually still ambiguous at present and in different instances may potentially instantiate either tense or a D⁰ head, this having direct effects on a number of syntactic phenomena. Speakers are therefore argued to significantly maintain a dual analysis of *de* in the current period of change, with different underlying structures being possible depending on the temporal interpretation of *de* in *shi-de* sentences.

The organization of the paper is briefly as follows. Section 2 focuses on the alternations in (1) and (2) and argues that the only plausible explanation of the full patterning observed is that *de* is undergoing movement to the verb. Considering further the interpretation of *shi-de* forms and the

interaction of this with object positioning, it is proposed that *de* is being re-analyzed as a past tense element, raising as a clitic to the verb from a T⁰ position. Section 3 then considers S-final non-past occurrences of *de* and suggests that these however occur in Complex Noun Phrase (CNP) structures, showing how such a second dual analysis of *de* can account for a number of otherwise conflicting patterns in *shi-de* forms. Section 4 then goes on to present a formal syntactic account of the hypothesized reanalysis of *shi-de* structures and provides further justification for the route of grammaticalization suggested. Finally the paper is closed with a consideration of the correspondence relation of D to T from a general cross-linguistic perspective, together with an examination of the structural position of *shi* in past tense *shi-de* sentences.

2. OBJECT/*de* REPOSITIONING IN THE *SHI-DE* CONSTRUCTION

The important alternation illustrated in (1) and (2) above can be schematically represented in simplified form as (4a,b) below, which highlights the part of the structure in need of explanation, i.e., how the object and the element *de* come to be repositioned with respect to each other:

- (4) a. V – Ob – *de*
 b. V – *de* – Ob

Concerning the relation of these two orders to each other, given that the order in (a) is found in all Chinese dialects, while that in (b) is more restricted in its occurrence, a first fairly natural assumption that can be made is that the ordering in (b) should somehow be derived from the more basic order (a). It can also be noted that the order in (a) diachronically precedes that in (b), again suggesting that the (b) order has been derived from the (a) order. Assuming this much, there seem to be three possible ways of analyzing the optional positioning of the object relative to *de*, as now examined.

A first fairly obvious possible way of relating (b) to (a) is to suggest that (b)-type surface forms might result from underlying (a) forms via simple rightwards movement of the object over *de* to clause-final position, as schematized in (5):

- (5) V t_i *de* Ob_i

Such a possibility is however unlikely to be right, for a number of reasons. Rightward object extraposition of this kind is cross-linguistically observed to occur predominantly when an object is either heavy or focused, as in,

for example, heavy NP shift in English or finite clausal extraposition in Hindi and German:³

- (6) John gave t_i to Mary [everything he possessed]_i/* t_i
- (7) Er hat t_i gesagt, [dass er heute kommen würde]_i
 he has said that he today come would
 'He said that he would come today.'

In *shi-de* constructions when the object occurs following *de*, it is however neither necessarily heavy nor necessarily focused and in fact the opposite is very often true. In examples such as (2), the post-*de* object *cannot* indeed be focused, as the focus is here automatically interpreted as being the adverbial element directly following *shi*. Furthermore a post-*de* object will by preference normally be light rather than heavy for reasons to do with the representation of old information. Specifically, as the focus in examples such as (1–3) is taken to be the adverbial/PP element directly following *shi*, any object present, either preceding or following *de*, will be part of the presupposition and so necessarily old information; as such, it will normally be represented by a simple bare (hence light) NP rather than a longer descriptive form of the type which might naturally occur when an NP is introduced for the first time as new information (as for example is often the case in English heavy NP shift). Informants furthermore indicate that when the object is a clausal complement and necessarily heavy, they in fact strongly prefer for it to be placed before *de*, as in (8), rather than “extraposed”, as in (9):⁴

- (8) ta shi zuotian shuo [ta bu xihuan Mali] de.
 he BE yesterday say he not like Mali DE
 'It was yesterday that he said that he didn't like Mary.'
- (9) (??) ta shi zuotian shuo de [ta bu xihuan Mali].
 he BE yesterday say DE he not like Mali
 'It was yesterday that he said that he didn't like Mary.'

It therefore seems rather unlikely that (b)-type forms result from any rightwards movement of the object from its post-verbal base position in (a). This being so, a second possibility to account for the order in (4b) may be to posit that it is actually the verb which is undergoing movement in (4b), raising leftwards to adjoin to the element *de* which would then be base-generated in some kind of higher functional head as indicated in (10). Such an approach would also have to assume that there is movement in (4a) of the whole VP containing the verb and its object as in (11):

- (10) V_i -de t_i Ob (=4b)
 (11) VP_i -de t_i (=4a)

Such a possibility is however also unlikely to be correct. If *de* is base-generated in a clausal functional head position, it should clearly occur located above VP-adverbs, yet such elements occur preceding *de* (as in (2)) and cannot occur following *de* as shown in (12). This is clearly unexpected if *de* were indeed to be located in a position in the functional structure dominating the VP.

- (12) ta shi qunian xue de (*zai xuexiao) Yingwen.
 he BE last year study DE in school English
 'It was last year that he studied English.'

If it is therefore concluded that neither movement of the object nor movement of the verb is likely to be responsible for the (b)-type orders, a third logical possibility is that it is actually *de* itself which is the element changing its position, moving leftwards from a base-generated clause-final position as in (13):

- (13) V de_i Ob t_i

Given the additional observation that *de* prosodically attaches to the right-hand side of the verb in examples such as (2) in the way of an enclitic element (i.e., it is not possible for there to be any intonational pause between the verb and *de*), such movement could perhaps be suggested to be an instance of clitic-movement/cliticization, movement driven by the needs of an element to attach to a particular type of host for phonological support. Furthermore, just as clitics may over time often show a change in the host they target for attachment, here it could be suggested that the alternation in (4a) and (4b) results from *de* as an enclitic simply switching to attach to a different, more restricted phonological target. In the more widespread/earlier pattern in (4a) it could be assumed that *de* in clause-final position unselectively cliticizes to whatever element is present clause-finally (i.e., the verb or a DP object), whereas in (4b) it could be suggested that *de* is now showing signs of coming to be more selective and deliberately targeting the verb as its host, hence moving over any clause-final object in order to encliticize to the verb. This kind of behavior and a gradual narrowing of the target for attachment is noted to be quite typical of the development of clitics (see, e.g., Spencer (1991)), such elements often becoming more selective in what they attach to over time and ultimately developing into affixes morphologically attached to just a single type of host.

This enclitic hypothesis of the alternation in (4a,b), which suggests that *de* in pattern (4b) moves to specifically target the verb as a phonological host, can now importantly be shown to be supported in a strong way by the behaviour of *de* in double object constructions (DOCs). In DOCs, in addition to the fully S-final positioning of *de*, it can be noted that the order in (14, 15) is significantly also possible with *de* preceding *both* the direct object *and* the indirect object:

(14) NP shi Adv/PP V de IO DO

(15) wo shi zuotian gei de tamen san-ben-shu.
I BE yesterday give DE they 3.CL.book

‘It was yesterday that I gave them three books.’

Such patterns indicate fairly clearly that sequences where *de* precedes the direct object as in (4b) (i.e. V *de* Ob) cannot in fact be assumed to result from simple movement of the object over *de* as here *two* elements are found following *de*, both the direct object and the indirect object. As it is unlikely that there is an operation moving both direct and indirect objects rightwards here (and no motivation for any such movement as noted earlier), it would seem that cases such as (15) instead provide strong support for the view that it is instead the element *de* which undergoes movement leftwards from a clause-final base position in (4b)-type forms, and that this movement of *de* also specifically targets the verb, in DOCs potentially raising to the verb over both the direct and the indirect objects. Given, as noted, that *de* does also exhibit clear enclitic properties in its leftwards prosodic attachment to the verb, the most reasonable explanation of the alternation in (4a,b) can now indeed be concluded to be the encliticization hypothesis, that *de* moves to cliticize to the verb in *shi-de* sentences of type (4b), and this is therefore why it ends up linearly preceding the object.

Such a hypothetical process of cliticization to the verb of a clause-final element can also be noted to have a well-documented precedent in Chinese, adding further potential plausibility to a clitic analysis of pattern (4b). Many researchers (e.g., Cao (1987); Shi (1989); Wu (1998)) have noted that historically the perfective aspect suffix verbal *-le* developed from a clause-final full verb, *liao* ‘to finish’. Originally *liao* occurred following the object of the descriptive verb as schematized in (16a). Later on however it underwent reduction and attached itself arguably as a clitic (and later still as a suffix) to the right of the verb and so now occurs between the verb and its object as in (16b). Such a path of development is clearly similar to what is argued to be taking place with S-final *de*: from an original clause-

final position, *de* becomes attracted to the verb and in cliticizing to the verb moves over the intervening direct object as in (17):

- (16) a. V Ob liao later →
 b. V-*le*_i Ob t_i
- (17) a. V Ob *de* in northern dialects now (optionally) →
 b. V-*de*_i Ob t_i

If it is indeed correct that *de* is specifically targeting the verb when it undergoes displacement in examples such as (2) and (15), one now needs to ask why this should be happening and what kind of verb-related clitic *de* could plausibly be. As noted above, when clitics come to target a single host-type rather than just a position and any category filling that position, they are characteristically close to the point at which they may develop further and be re-analyzed as morphological affixes. If this consequently suggests that *de* may be en route to becoming a new verbal suffix, one needs to consider what type of verbal inflection *de* might actually be turning into. In the case of *liao/-le* becoming a verbal suffix, it is widely assumed that *-le* now instantiates the verbal category of perfective aspect, a category which cross-linguistically often occurs affixally attached to the verb. The element *de*, we would now like to argue, also instantiates a syntactic category which commonly occurs in affix form on verbs in a wide range of languages. Specifically, we would like to suggest that various properties of *shi-de* sentences all point towards the single conclusion that *de* is currently in the process of becoming a *past tense morpheme*, and that as such it is undergoing repositioning and developing into a suffix on the verb in a way which is indeed cross-linguistically very common with tense morphemes.

A first important point leading towards such a conclusion is that quite generally in *shi-de* sentences one tends to find a very strong preference to interpret the event described by the predicate as having taken place in the past, even in the absence of any past time adverbials. For example, (18) below seems *only* to allow for a past time interpretation:

- (18) wo shi zuo huo-che qu Beijing de
 I BE sit train go Beijing DE
 ‘It was by train that I went to Beijing.’

Secondly, one finds that *de* is in fact also often *necessary* for a past time interpretation. For example, in (19) below, if *de* is present, then only a past time interpretation is possible, and if *de* is not included a past time interpretation is actually not available:

- (19) wo shi gen Zhangsan qu Beijing (de).
 I BE with Zhangsan go Beijing (DE)
 with *de*: 'It was with Zhangsan that I went to Beijing.'
 without *de*: 'It's with Zhangsan that I'm going to Beijing.'

This indicates that although the occurrence of *de* might seem to be 'optional', in fact if a past time interpretation is necessary, then *de* is actually obligatory with *shi*. This is further illustrated in (20), where the presence of a past time adverbial necessitates a past time reading, and this in turn forces the occurrence of *de* in the structure:

- (20) ta shi zuotian qu Beijing *(de).
 he BE yesterday go Beijing DE
 'It was yesterday that he went to Beijing.'

There is consequently a clear strong connection between the presence of *de* and past time/tense interpretations. Despite this strong connection however, *shi-de* sentences with *de* can in fact have non-past interpretations if this is forced by the use of non-past/future adverbials together with the occurrence of future/modal elements such as *hui* 'will' or *yao* 'will'. Note that the latter modal elements are indeed necessary for the non-past reading and it seems that a non-past adverbial on its own is not enough to license a non-past interpretation:

- (21) ta shi mingtian *(cai hui) qu Beijing de
 he BE tomorrow only-then will go Beijing DE
 'It is (only) tomorrow that he will go to Beijing.'

It can therefore be concluded that the connection of *de* to past time interpretations instantiates a heavy *preference*, and that not all occurrences of *de* necessarily have to be interpreted as past time events. In pragmatic terms, the default tendency for past time interpretation with *de* has the status of a generalized conversational implicature – a preference which is clearly strong, but which can still be over-ridden with the deliberate use of certain elements/strategies, such as the occurrence of non-past adverbials and modals as in (21).

We can now add to the general patterning observed here a highly significant new piece of evidence bearing directly on the status of *de* when it occurs in pattern (4b). Interestingly, it is found that when *de* precedes the object and is by hypothesis raised and attached to the verb as an enclitic en route to becoming a verbal suffix, it is no longer possible to use modals and adverbs to over-ride the past time implicature of such constructions any

more and *only* a past time interpretation is possible in such a configuration:

- (22) *ta shi mingtian cai hui qu de Beijing.
 he BE tomorrow only-then-will go DE Beijing

Examples such as (22) which instantiate the structure in (4b) here show an important contrast with those in (18)–(21) which represent (4a). The latter cases showed that while a past time interpretation is strongly associated with the use of *de*, it still effectively constitutes a preference which can nevertheless be over-ridden with appropriate means. When however *de* shows signs of really becoming a verbal element and is suggested to undergo reanalysis as an instantiation of (past) tense, moving to cliticize to the verb, it seems the past time conversational implicature (i.e., the ‘preference’ for past time interpretation) has actually become strengthened to the extent that it is now part of the genuine meaning of (verbal enclitic) *de* and can therefore no longer be over-ridden (i.e., *de* in such a position can mean *only* past). The suggested analysis of *de* in the pre-object pattern of (4b) as a new past tense morpheme therefore seems to be strongly supported. It can also be noted that the occurrence of syntactic change as the result of the strengthening of the preference for a particular interpretation is a path of development which has been argued to be a common pattern of reanalysis. Hopper and Traugott (1993) in particular suggest that the strengthening of a conversational implicature to the point where it becomes standardized and triggers a formal reanalysis is a mode of syntactic and semantic change which underlies much diachronic change.⁵ In the case of *de*, the preference for a past time interpretation can be taken to have finally strengthened to the extent that it has eventually allowed for a reanalysis of *de* as a genuine instantiation of the category of past tense, such a reanalysis now indeed being manifested in its movement to the verb.

The development of *de* as a verbal clitic encoding past time/tense can also be suggested to have been functionally assisted by the natural structuring of information in *shi-de* forms. As noted earlier, the *shi-de* construction commonly encodes a clear focus, set off against a strongly presupposed background which often consists of the verb and its object, as in examples (1–3) and (18–20). As the object is then frequently part of the presupposition and hence old information, there will be a natural tendency for representing it by means of a pronominal element rather than a repetition of a full descriptive NP form. As Chinese furthermore allows for null pronominal objects (*pro* or topic-operator-bound trace as in Huang (1984)), *shi-de* sentences then frequently occur without any overt object, and also often without any overt *shi*, as in (23), such forms being pre-

ferred to fully-specified examples like (24) which are grammatical but sometimes felt to be a little awkward/over-specified:

(23) (wo) jintian mai-de.
(I) today buy DE
'I bought it *today*.'

(24) wo shi jintian mai nei-ben-shu de.
I BE today buy that-CL-book DE
'I bought that book *today*.'

A presupposed/old object may alternatively also occur placed in topic position:

(25) nei-ben-shu wo jintian mai-de.
that-CL-book I today buy DE
'That book I bought *today*.'

The clear result in commonly-heard forms such as (23) and (25) is therefore that the verb and *de* are importantly heard adjacent to each other, unseparated by other overt material. Such common verb-*de* adjacency with *de* prosodically attaching to the verb can be argued to be a clear functional factor favoring the development of *de* as a specifically verbal clitic and therefore leading to and licensing its attachment to the verb even in the presence of an overt post-verbal object. As a clitic optionally attaching to the verb and being strongly associated with a past time interpretation, the possibility of *de* becoming re-analysed as a past tense morpheme therefore seems to be both natural and perhaps even anticipated as a further stage in its development.

In sum then, there are a variety of good reasons for assuming that the element *de* in *shi-de* structures of type (4b) has indeed come to be a new instantiation of (past) tense in northern dialects of Mandarin Chinese. Before we go on to see how this is formally produced in the syntax in section 3, we will first turn to consider what the source of *de* is in *shi-de* forms and also rather importantly what the identity of *de* may be when it occurs in full sentence-final position in the post-object pattern (4a).

3. POST-OBJECT *DE*

Let us now reconsider what kinds of interpretations arise with *de* in the different *shi-de* patterns (4a) and (4b). If *de* occurs in the pre-object position as in (4b), it has been noted that *de* has a necessary/strict interpretation

as past time/tense. If *de* however occurs in pattern (4a) following the object of the verb in clause-final position, there is a preference for past time interpretation of the event described by the predicate, but non-past interpretations are also possible if certain modals and adverbials are used. When *de* is present with such non-past interpretations, it is obvious now that it cannot be instantiating the category of past tense. Assuming the analysis of *de* as a past tense morpheme in pattern (4b) to be correct for the various reasons given, this therefore leads to the conclusion that *de* is in fact potentially ambiguous in its categorial status in *shi-de* sentences and in addition to instantiating past tense in certain instances, it must also be able to occur as some other non-tense category in pattern (4a), relating to an underlying syntactic structure which may possibly be quite different from that in past tense occurrences of *de*.

If we consider now what category and status *de* might have in these other non-past cases, it can be noted that linguists describing the *shi-de* construction in previous work (e.g., Chao (1968); Paris (1979); Li and Thompson (1981)) have frequently identified *de* as the same element *de* which occurs in relative clauses and possessor structures introducing a modification on a following nominal, as for example in (26):

- (26) [wo zuotian mai]-de shu
 I yesterday buy DE book
 'the book I bought yesterday'

This is indeed a reasonable assumption, as cross-dialectally in Chinese (in Mandarin, Shanghainese, Taiwanese, and Cantonese) the element which occurs in the position of *de* in cleft constructions consistently has the same pronunciation as the element which occurs in relative clause and possessor constructions, suggesting that they are closely related.⁶ If the *de* in *shi-de* sentences then has indeed developed from 'nominal modifier *de*', given that this latter element regularly precedes a nominal/N one might expect that there would be some kind of (phonetically null) nominal projected in *shi-de* forms too. Here we can note that in relative clause and possessor structures in Chinese it is not uncommon for the head noun following *de* to be omitted if it is anaphoric and/or can be recovered from the discourse context, as in (27), indicating that phonetically null/ 'deleted' head nouns are most certainly possible with *de*:

- (27) na shi wo zuotian mai de (dongxi).
 that BE I yesterday buy DE (thing)
 'That's what/the thing/the one I bought yesterday.'

Shi-de sentences are however unlikely to be simple covert relative clause structures with a deleted/empty head noun, as the interpretation of overtly-headed relative clauses following the copula *shi* is rather different from *shi-de* forms and such sequences lack the cleft-like focus interpretation present in *shi-de* sentences. A second more likely possibility can be suggested to be that *shi-de* forms are instead more closely related to CNP structures of the ‘the fact/news that IP’ type where the same *de* occurs linking a *complement* clause to a following nominal, as for example in (28):

- (28) [IP ta bu hui lai]-de xiaoxi
 he not will come DE news
 ‘the news that he will not come’

In an earlier examination of *shi-de* sentences, Kitagawa and Ross (1982) indeed propose an analysis along such lines and suggest that there is a phonetically null head-noun following *de* with an interpretation something like ‘(the) situation’. Such a proposal is inspired by the observation frequently made in the literature (e.g., in Chao (1968); deFrancis (1963)) that *shi-de* sentences always seem strongly linked to the direct discourse setting, and function to clarify information relating to some aspect of the discourse situation which is obvious to both speaker and hearer (for example, explain when or where some obvious, presupposed event has taken place). Kitagawa and Ross suggest that Chinese *shi-de* sentences (and equivalents in Japanese) therefore have interpretations something like the second gloss given for (1), repeated below:

- (1) wo shi zuotian mai piao de.
 I BE yesterday buy ticket DE
 ‘It was yesterday that I bought the ticket.’ OR:
 ‘As for me, the situation is that I bought the ticket
 YESTERDAY.’

Quite generally, given that nominal-modifying *de* is indeed the most natural default source to presume for *de* in the *shi-de* construction, it is not unnatural to suppose that speakers do in fact assume the presence of some kind of semantically very light N following *de* in the way that Kitagawa and Ross essentially suggest. Here it can also be noted that in an equivalent cleft-like construction in Burmese, a ‘dummy’ head-noun *haa* is actually physically present in the structure. This element elsewhere occurs as the nominal complement of the demonstrative *dii* ‘this’ meaning ‘this one’, and is either pronounced as *haa* or collapsed with *dii* as the form *daa*, as shown in (29):

- (29) *dii haa* ‘this (one)’
daa ‘this (one)’

In clefts, *haa* regularly collapses with the non-irrealis morpheme *teh* to result in *taa*:

- (30) *dii-nee weh taa paa.*
 today buy TAA Pol
 ‘It was today that I bought it.’

There is consequently also certain comparative empirical support for the possibility that Chinese *shi-de* clefts may contain a kind of light N as suggested.

A possible alternative account of the source of *de* in *shi-de* forms which still recognises the obvious connection to nominal modifying *de* but avoids the assumption of any empty N-head following *de* might instead be to follow Paris (1979), and Li and Thompson (1981) rather than Kitagawa and Ross, and suggest that nominal modifying *de* in both CNPs and in *shi-de* forms is essentially just a (clausal) nominalizer. In *shi-de* sentences it could then be assumed that *de* simply functions to nominalize the clausal constituent preceding *de*, and unlike the case of relative clauses and other CNPs, such a clausal nominalization might possibly not be syntactically combined with any following (null) head noun.

Either of the above plausible assumptions about the original source of *de* in *shi-de* forms can now be noted to have interesting consequences. First of all, we can observe parallels between *shi-de* forms and the behavior and interpretations of certain other clear *nominal/nominalization* forms elsewhere, suggesting that the *shi-de* construction may well be rooted in an original nominal(ization) form and that this may then have possibly influenced the way that *shi-de* structures have come to be interpreted. Secondly, a nominalization/CNP analysis of current non-past *shi-de* forms allows for a principled account of various restrictions on the occurrence of *wh*-adjuncts and adverbial modification found differently in *shi-de* forms in past and non-past interpretations and leads to important conclusions about differences in the structures which may underlie *shi-de* sentences.

Considering first the particular interpretation associated with the use of *de* in *shi-de* forms, *de* is essentially argued to be pragmatically appropriate when it marks a structure in which a focused constituent (following *shi*) is set off against a strongly *presupposed* background event. In this sense, the use of *de* can be suggested to provide a ‘guarantee’ of the occurrence of the background event, clearly signaling that the relevant event either has already taken place in the past or will certainly occur at some point

in the future. This function of marking the background event as fully presupposed can now be argued to be largely responsible for the preference for a past time interpretation commonly noted with *de*.⁷ Clearly it is possible to have the greatest confidence and be able to guarantee that an event will occur *at some point* if it is in fact known that the event has indeed *already* occurred; one can be confident about the future occurrence of any event with much less certainty. *De* is therefore naturally found marking and guaranteeing the occurrence of past time events much more frequently than non-past events. As noted in section 2 though, the past time interpretation of the predicate when *de* follows the object (i.e., pattern 4a) still remains a *preference* which can indeed be over-ridden with appropriate means (non-past time adverbials and modals). From a comparative point of view, it can now be noted that the important strongly presuppositional property associated with *shi-de* sentences is also found in certain nominalization forms in English, which seem to heavily imply or guarantee the occurrence of a particular event. Furthermore, as with *shi-de* forms this ‘guarantee’ most frequently gives rise to a past time interpretation. For example, in (31) the events represented by the nominalizations are most naturally understood to have taken place in the past:

- (31) The panel will discuss the destruction of the village/the killing of the hostages.

However, exactly as with *shi-de* forms, the past time interpretation would only seem to be a default interpretation, and may be over-ridden with the use of adjectives such as ‘planned’, ‘scheduled’ etc. which function to guarantee the occurrence of the event in the future:

- (32) The panel will discuss tomorrow’s ??(planned) killing of the hostages.
- (33) They’re talking about tomorrow’s ?(scheduled) destruction of the bridge.

Given the clear similarities between the interpretational preferences in *shi-de* sentences and the English nominalizations in (32–33) (and their over-ridability), and given the likelihood that *shi-de* forms have as their source a nominalization/nominal construction, it is tempting to see the common past time interpretation with *shi-de* sentences as being potentially related to the existence of an original nominal(ization) syntax, and possible that such a source structure may have to a certain extent been responsible for the past time conversational implicature arising in *shi-de* sentences.⁸

A nominalization/CNP source of *shi-de* forms can now also be suggested

to account for certain restrictions on the distribution and interpretation of adverbs and *wh*-adjuncts in *shi-de* sentences. Broadly one finds two types of restrictions. First of all, *wh*-adjuncts such as *weishenme* ‘why’ and *zenme* ‘how’ cannot occur following *shi* when there is an intended future interpretation of the predicate, as in (34) and (35):

(34) ?*ni shi weishenme cai hui qu Beijing de?
 you BE why will go Beijing DE

(35) *ni shi zenme cai hui qu Beijing de?
 you BE how only-then-will go Beijing DE

Secondly, adverbs cannot occur preceding *shi* and modify the predicate following *shi* when there is a non-past interpretation of the predicate in *shi-de* forms, as seen in (36) and (37) below (compared with 21 above):

(36) *wo mei-tian dou shi hui qu Beijing de.
 I every-day all BE will go Beijing DE

(37) *mingtian ta shi (cai) hui qu Beijing de.
 tomorrow he BE (only-then) will go Beijing DE

Such restrictions can be straightforwardly explained if it is assumed that non-past *shi-de* forms have as their underlying syntactic form an original CNP or nominalization structure. Concerning the latter adverb cases (36) and (37), elsewhere it has often been observed that adverbs which occur external to DPs cannot quantify into DPs or modify events depicted internal to a DP. As a result of this opacity of DPs, in (38a) below it is not possible to understand ‘yesterday’ as referring to the time when Bill betrayed Sue, only to the time of John’s discussion, and (38b) is simply unacceptable because of the incompatibility of ‘yesterday’ with ‘will talk’:

(38) a. Yesterday John discussed [Bill’s betrayal of Sue].
 b.*Yesterday I will talk about [Bill’s betrayal of Sue].

Consequently, if the sequence following *shi* in non-past *shi-de* sentences is indeed a DP/nominal structure of some kind, it is indeed anticipated that adverbs external to this sequence (i.e., preceding *shi*) should not be able to quantify in to the predicate inside the DP. As for the unacceptability of *wh*-adjuncts such as *zenme* and *weishenme* following *shi* in future-type interpretations of the predicate, this is again expected if the sequence following *shi* in such interpretations is a CNP. Elsewhere CNPs in Chinese do not allow such *wh*-adjuncts to occur inside them, as shown in (39, 40):

- (39) * ta shi [[_{DP} weishenme xuexi Dewen]-de ren]?
 he BE why study German DE person
- (40) * [_{DP} ta weishenme/zenme piping Meiguo]-de xiaoxi]
 he why/how criticise USA DE news
 bu zhengque?
 not accurate

Such patterns can now be shown to significantly contrast with the occurrence of adverbs and *wh*-adjuncts in *shi-de* forms in pattern (4b) where *de* encliticizes to the verb and precedes the object, and the predicate accordingly has a past time interpretation. Here it is found that adverbs can in fact occur preceding *shi* and still quantify over the predicate following *shi*, as in (41), and that *wh*-adjuncts such as *weishenme* and *zenme* can also legitimately occur following *shi* as in (42):

- (41) zutian ta shi gen Zhangsan lai mai-de piao.
 yesterday he BE with Zhangsan come buy DE ticket
 'It was with Zhangsan that he bought the ticket yesterday.'
- (42) ni qu-nian shi weishenme/zenme qu-de Beijing?
 you last-year BE why/how go DE Beijing
 'How/why was it that you went to Beijing last year?'

If the analysis of verbal clitic *de* in pattern (4b) put forward here is correct, such contrasts have a simple explanation. If *de* in pattern (4b) is an instantiation of past tense and categorially different from non-past *de* in pattern (4a), the presence of *de* in examples such as (41) and (42) can be suggested to signal the occurrence of a simple TP rather than a nominal CNP island constituent. As TPs are not islands for *wh*-adjuncts nor opaque constituents for external adverbial modification, it is quite expected that both *wh*-adjuncts and pre-*shi* adverbs should indeed be able to occur in cases such as (41) and (42). The contrasts between (34–37) and (41–42) therefore seem to add good support first of all for the general hypothesis that *de* may correspond to two distinct syntactic types in its past and non-past interpretations, and secondly for the possibility that significantly different syntactic structures may correspond to these different instantiations of *de*, in the case of non-past *de* this being an opaque nominal constituent which is an island for *wh*-adjuncts (a CNP or perhaps a clausal nominalization), and in the case of past tense *de* this being instead some kind of non-opaque, non-island constituent marked by *de*, quite plausibly a simple TP.

The above conclusions now also raise a further important question about

the syntactic status of *de* in the S-final [V Obj *de*] pattern (4a) when *de* has a past time interpretation. Specifically, one would like to know whether *de* in such cases gives rise to a past time interpretation simply as the result of a pragmatic conversational implicature, or whether *de* may be formally reanalyzed as a (past) tense morpheme also in these cases as with pattern (4b). Now having considered the patterns with adverbs and *wh*-adjuncts we have a potential diagnostic for resolving this issue. If past time interpretations of *de* in pattern (4a) allow for the occurrence of *wh*-adjuncts following *shi* and adverbs preceding *shi*, it can be concluded that *de* in such cases is not associated with the projection of any opaque, island-like nominal projection, but instead relates to a different TP structure headed by *de* as an instantiation of past tense. If on the other hand past time interpretations of *de* in pattern (4a) pattern like future-time interpretations and disallow the occurrence of external adverbs and internal *wh*-adjuncts, then one can conclude that past time *de* in pattern (4a) is indeed associated with the same CNP-type underlying structure and is interpreted as past only by conversational implicature. What one finds, as shown below in (43) and (44), is that *wh*-adjuncts and adverbs in (4a) past time interpretations of *de* significantly show none of the unacceptability of the same elements occurring with non-past *de* in pattern (4a):

- (43) *zuotian* *wo shi zai xue-xiao kan-jian ta de.*
 yesterday I BE in school look-see he DE
 ‘It was in the school that I saw him yesterday.’
- (44) *ni shi weishenme/zenme lai xue-xiao de?*
 you BE why/how come school DE
 ‘Why/how is it that you came to school?’

This clearly suggests the interesting conclusion that *de* has allowed for a formal reanalysis as a past tense element projecting a TP not only in pattern (4b) but also in full S-final position. How this may be possible and what kinds of formal syntactic structures underlie *shi-de* forms in patterns (4a) and (4b) will now be examined in section 4 below.

4. THE SYNTAX OF REANALYSIS IN *SHI-DE* SENTENCES

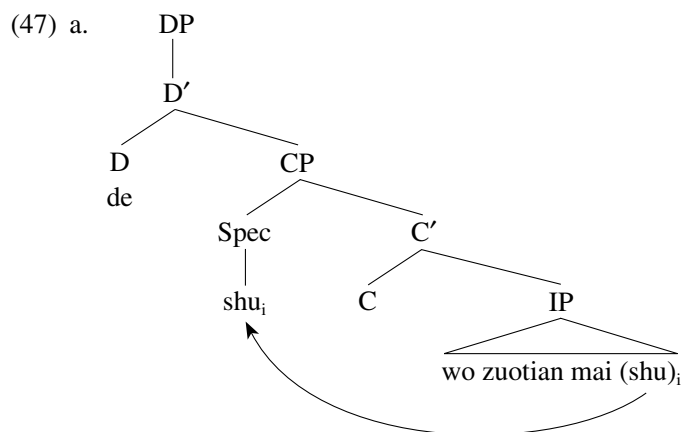
In attempting to compare the structures underlying past and non-past *shi-de* forms and how the latter may have undergone reanalysis as a new past tense structure, we will first outline what we assume to be the underlying syntax of non-past *shi-de* forms. Taking *de* in non-past *shi-de* forms to be

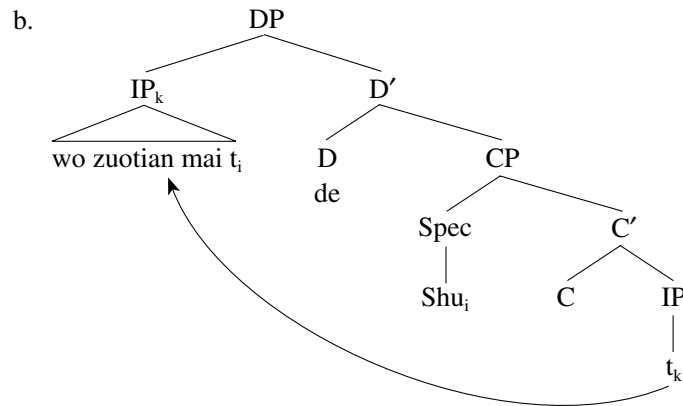
the nominal modifier *de* of regular CNPs, we assume as noted in section 3 that non-past *shi-de* forms contain a CNP structure headed by a light N element.⁹ Concerning the analysis of CNPs in Chinese, recent work on CNPs in Simpson (1997, 2001) and Wu (2000) has argued at length for a Kayne (1994)-style analysis of relative clauses and other noun-complement clause CNPs in Chinese with the following properties:

- (45) a. *de* is an element of type D in all CNP type structures.
 b. *de* selects a *rightward* clausal complement, in line with the dominant head-initial direction of complement selection in Chinese.
 c. (Following Kayne (1994)) in relative clauses the relativized noun/NP raises to SpecCP and then the IP remnant raises higher to SpecDP.
 d. The motivation underlying this IP movement is suggested to be that *de* is an enclitic determiner similar to the enclitic determiners found in languages such as Romanian, Swedish, Buginese, and Mokilese, triggering movement of an element to its SpecDP position for phonological support (in the case of Chinese CNPs triggering movement of the IP to SpecDP).

The derivation of a simple structure such as (46) would then be as indicated in (47):

- (46) [wo zuotian mai]-de shu
 I yesterday buy DE book
 'the book I bought yesterday'





The motivations for assuming such an analysis and for analyzing *de* as a determiner are partly historical, partly related to various cross-linguistic patterns observed, and partly theory-internal. First of all, *de* is commonly taken to be derived from the earlier element *zhi* which has been noted to have had a demonstrative function as in (48) (among certain other nominal-related functions; see Pulleyblank (1995)):

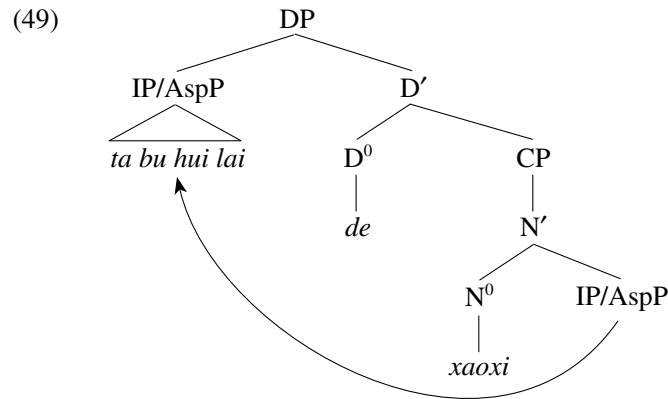
- (48) zhi er chong you he zhi?
 these two worm again what know

‘And what do these two worms know?’ (Zhuangzi Yinde 1.10)

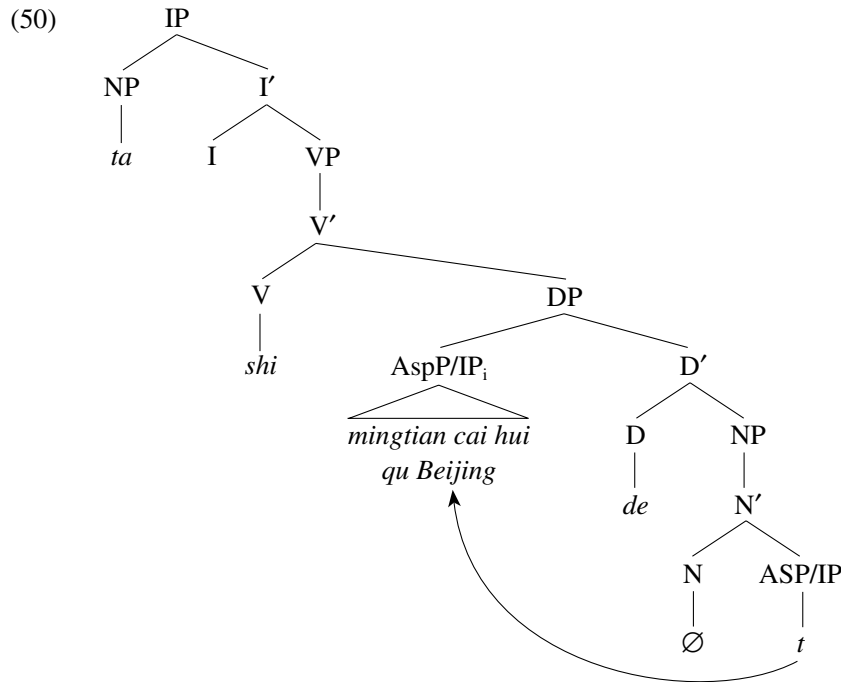
Demonstratives are generally taken to be D^0 elements and frequently develop into determiners due to a loss in their deictic force. Simpson (1997, 2001) suggests that *de* is a D^0 /determiner-type element developed from this early demonstrative and that its present apparent lack of definiteness specification has resulted from the process of ‘definiteness-bleaching’ in which determiners and demonstratives over long periods of time often lose their original definiteness value and take on certain other functions. Secondly, it is observed that a number of languages (e.g., Lhakota, Diegueno, and Tzeltal, among others) do indeed make use of clear determiners rather than complementizers to build relative clause structures, hence that the analysis suggested for Chinese is elsewhere frequently attested. Third, if one attempts to analyze relative clauses in Chinese in terms of Kayne’s more restrictive (1994) theory of relativization, it becomes apparent that the element *de* can in fact only be analyzed as a determiner in D^0 and cannot be taken to occur in C^0 (i.e., it cannot be analyzed as a relativizing ‘complementizer’). Finally, adopting such an analysis is shown to allow for a simple explanation of the well-documented typological markedness of

Chinese relative clauses. As noted in Dryer (1992), Chinese is essentially unique in being the only language attested anywhere as having a basic V-O word order and also *pre-nominal* relative clauses. This exceptional fact about Chinese can in a Kaynean analysis of relative clauses be simply attributed to the properties of a single lexical item: the enclitic requirements of the D^0 element *de*, resulting in an analysis of CNPs which is uniformly head-initial and fully regular in its underlying structure.

Simpson (1997) and Wu (2000) argue for a similar treatment of noun-complement clause CNPs, though in such cases with *de* in D^0 selecting a rightward NP (rather than CP) complement, and the N^0 head of this NP in turn selecting a rightward IP/AspP complement as in (49), representing example (28). The element *de* is furthermore taken to have the same enclitic requirements as in relative clauses, triggering raising of the IP/AspP clausal constituent to SpecDP as in relative clauses:



Turning now to *shi-de* forms, under the assumption that such structures in non-past interpretations contain a noun-complement clause CNP headed by a phonetically null light N as suggested, the underlying structure and derivation of examples such as (21) can be suggested to be as in (50):

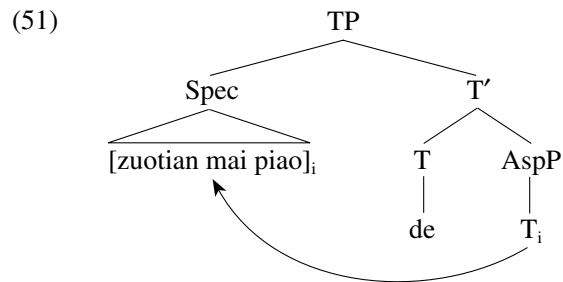


Taking (50) to be the representation of *non-past shi-de* forms, we are now in a position to see how such structures may be reanalysed into rather different syntactic forms when *de* comes to instantiate past tense, as well as how further aspects of the syntax of past tense *de* may be accounted for.

The central contention of the analysis argued for in sections 2 and 3 above is that nominal modifying *de* undergoes reanalysis as a new instantiation of past tense. In categorial terms it can therefore now be suggested that the original D^0 head of the CNP taken to occur in the source construction becomes reanalysed as an element of type T^0 . Such a reanalysis of the head of the construction will then automatically result in the original DP complement of *shi* in non-past *shi-de* forms being reinterpreted as a new TP complement to *shi*. Concerning the rest of the CNP structure in (50), a further change, which can be suggested to accompany the reanalysis of *D* as *T*, is that the light *N* head present in (50) is pruned and lost from the underlying structure so that T^0 comes to directly select for a clausal rather than a nominal complement, as indeed elsewhere with T^0 elements.¹⁰ Such simplification and pruning of the NP projection can be suggested to be possible for two reasons. First, it may be possible because the N^0 head is a semantically light expletive-type *N* (similar, for example, to Japanese *koto* ‘thing’) assumed to simply fill the regular *N*-position of the source CNP

construction, and it is therefore not an element which is required for any interpretative purposes (hence is rather easily “eliminable”). Secondly, the hypothesized N may be essentially ignored and eliminated during the reanalysis of the DP as a TP as the N is phonetically covert and there is consequently no overt phonetic material which might have to be reanalysed as some other category.¹¹ Such a hypothetical reanalysis of the structure will then result in new TP forms such as (51) occurring as complements to *shi* in place of DPs, with the clausal complement of T⁰ (arguably an AspP, potentially containing the perfective aspect marker *-le*) undergoing raising from its base position to SpecTP, essentially as in the original DP structure. Note that here we concentrate on and present the lower *de*-related part of the full *shi-de* structure and later return to consider the upper half of the structure:

- (1) wo shi [_{TP} zuotian mai piao de].
 I BE yesterday buy ticket DE
 ‘It was yesterday that I bought the ticket.’



Structure (51) above represents pattern (4a) when *de* has a past time interpretation. In section 3 we argued that *de* encodes past tense not only in pattern (4b) but also when it appears following the object as in (1). *De* in (1) and other similar examples can therefore be taken to be occurring base-generated in the new T⁰ position as indicated in (51). Concerning pattern (4b), where *de* attaches directly to the verb and precedes the object, here we suggest as before that this is the result of a cliticization operation in which *de* moves to target the verb, and that prior to cliticization and movement *de* in such cases is base-generated in the same basic T⁰ position as in pattern (4a) and tree (51). The critical *optionality* between pattern (4a) and pattern (4b) therefore does not relate to any difference in the underlying structure projected, but is taken to relate to *de* targeting different hosts for cliticization: in the case of (4a), *de* simply cliticizes to the right edge of the AspP in SpecTP; in (4b) however, *de* alternatively

targets the verb as a more specific phonological host and so raises leftwards from its base position to do this. Such an approach to the optionality in the positioning of *de*, which essentially ascribes it to the availability of different possible targets for cliticization, can be suggested to be potentially more appropriate as an analysis of *de*-positioning in *shi-de* forms than other pure-syntax-based possibilities. Given that the optional repositioning of *de* in pattern (4b) appears to result in no real perceptible differences in interpretation (with *de* encoding past tense in both patterns (4a) and (4b)), it might seem difficult to account for such an alternation in *purely* syntactic terms, as random, optional syntactic movement having no effects on interpretation is assumed to be unavailable in current minimalist approaches to syntax.

Processes of cliticization driven by primarily phonological considerations are however often observed to display optionality of exactly this kind. One good illustration of this is given in Spencer (1991, 372–373) who notes that Polish aux/tense clitics optionally move and attach to a wide variety of phonological hosts: pronouns, complementizers, adverbs, NPs and numerals (these not necessarily occurring in any fixed clausal P2 position either), and hence that there is a considerable degree of optionality in the placement of aux clitics in this language. Elsewhere studies of the development of clitics have shown that clitics may over time gradually become more selective and switch from targeting general syntactic positions or differing constituents as hosts to targeting certain more specific syntactic categories, and that during the period of change apparently optional attachment to either original or new host category is possible. In the case of past tense *de*, it can therefore be suggested that *de* is currently in just such a transitional stage, tolerating attachment both to an original general syntactic host (AspP) as well as also showing signs of becoming more selective and optionally targeting the specific syntactic category of the verb for phonological support.^{12, 13}

A movement-cliticization account of *de* in pattern (4b) can also be argued to be preferred to an alternative affixation analysis which might suggest that *de* is now simply base-generated on the verb as a suffix in examples such as (2). Essentially there are two types of argument against the latter possibility. The first is that it is clear that past tense *de* in pattern (4a) cannot be a verbal suffix as it encliticizes to whichever direct or indirect object DP occurs finally in the AspP preceding it. As it may be implausible to imagine that the same past tense morpheme *de* has two lexical entries, one as a suffix and the other as a clitic, it would seem that a natural uniform analysis of past tense *de* needs to recognise it as a special clitic which (optionally) moves to the verb from a T⁰ position. A second argument

in favor of such a treatment comes from a further consideration of the double object construction (DOC). Earlier it was noted that in addition to a possible S-final position, past tense *de* can also occur attached to the verb in DOCs, hence both a *de*-final [V IO DO-*de*] sequence and a *de*-raised [V-*de*_i IO DO t_i] form occur as noted in example (15):

- (15) wo shi zuotian gei de tamen san-ben-shu.
 I BE yesterday give DE they 3.CL.book
 [V-de IO DO]

‘It was yesterday that I gave them three books.’

Here it can now be noted that in addition to the patterning illustrated in (15), many speakers also allow for *de* to occur intervening between the indirect object and the direct object as in (52):

- (52) wo shi zuotian gei tamen de san-ben-shu.
 I BE yesterday give they DE 3.CL.book
 [V IO-de DO]

‘It was yesterday that I gave them three books.’

This might initially seem to go against the verbal-encliticization analysis argued for in section 2, as here *de* seems to be attaching to the indirect object pronoun not the verb. However, in addition to the clear fact that the order in (15) with *de* enclitic on the verb does show *de* to be targeting a verbal host, it can be suggested that the order in (52) results from syntactic incorporation of the indirect object pronoun into the verb prior to *de* attachment. Following Baker and Hale (1990) and Bresnan and Mchombo (1987), who argue for the general possibility of pronominal incorporation phenomena, it can be suggested that indirect object incorporation in cases such as (52) creates a complex verbal element to which *de* may subsequently attach as a verbal clitic. As indirect object incorporation may be reasonably assumed to be a syntactic operation, this indicates that that *de* encliticization/attachment should also be assumed to occur during the syntactic derivation rather than be the product of lexical suffixation, and only such a movement-encliticization analysis of *de* seems able to account for the patterns noted here that *de* can occur both finally, between the indirect object and direct object, and also attached directly to the verb.¹⁴ Here it can also be noted that such patterns distinguish *de* from verbal *le* which can only attach directly to the verb and is unacceptable if positioned after an indirect object as indicated in (53):

- (53) a. wo gei-le tamen san-ben-shu
 I give LE they 3-CL-book
 'I gave them three books.'
- b.*wo gei tamen-le san-ben-shu
 I give they LE 3-CL-book

The contrast between (55b) and (54) can be simply accounted for if it is assumed as suggested above that *de* is a clitic moving in the syntax to attach to the verb together with any incorporated indirect object, and that verbal *le* is (as commonly assumed) a suffix directly attached to the verb prior to insertion in the syntax and therefore prior to any possible indirect object incorporation to the verb.

The cliticization-movement analysis of *de*'s attachment in *shi-de* sentences can also be suggested to allow for a possible account of the observation that when perfective aspect verbal *le* occurs in *shi-de* forms, only pattern (4a) and not pattern (4b) is possible, as shown in (54):

- (54) a. wo shi zuotian mai-le piao de.
 I BE yesterday buy LE ticket DE
 'It was yesterday that I bought the book.'
- b.*wo shi zuotian mai-le-de piao.
 I BE yesterday buy LE DE ticket

Here it can be suggested that the encliticization of *de* and its attachment for phonological support may be subject to a restriction that *de* can only target and attach itself to a host which is phonologically "strong" in the sense of being a syllable which bears a tone and is not destressed. Verbal *le* is always destressed and has lost any original tone it may have had and can therefore be suggested not to be strong enough to constitute a suitable target for *de*'s cliticization, blocking pattern (4b) and *de*'s movement to the verb. Instead, as pattern (4a) is available as an option, *de* in such cases will simply cliticize to the right edge of the AspP (which does contain a strong syllable). Note furthermore that the unacceptability of (54b) is actually not directly due to the fact that it instantiates pattern (4b) with movement of *de* over the object; if the object of the verb is positioned S-initially as in (55), it is similarly unacceptable for *de* to attach to a verbal base suffixed with *le*:

- (55) nei-ben-shu wo shi zuotian mai (*le)-de.
 that-CL-book I BE yesterday buy (LE) DE
 'It was yesterday that I bought that book.'

As (55) could in theory be an instantiation of either pattern (4b) or (4a) (i.e., in syntactic terms *de* in (55) could either be moving to the verb or it could be attaching to the right edge of AspP), this indicates that it is the creation of a sequence of [**V-le-de*] in any way which is unacceptable and that it is not pattern (4b) which is specifically blocked by the occurrence of *le* on the verb. Clearly something in the surface string [**V-le-de*] rather than its derivation must therefore be responsible for the unacceptability of such forms, and this can be suggested to be the weakness of the suffixed base that *de* as a clitic is attempting to attach to, clitics generally needing phonological support from a stronger element present in the structure.^{15, 16, 17}

Two further syntactic arguments can also be added on here as general support for the structure in (51) and the assumption that there is indeed movement of the AspP constituent from complement-of-T⁰ position to SpecTP. The first of these requires a reconsideration of how it is that *wh*-adjuncts can legitimately occur in past tense examples such as (42) and (44). In section 4 it was noted that if non-past occurrences of *de* in *shi-de* relate to an underlying CNP structure but past time interpretations project instead a TP, then various contrasts in acceptability between past and non-past *shi-de* structures with *wh*-adjuncts and pre-*shi* adverbs could be reasonably explained, CNPs but not TPs being syntactic islands for the licensing and interpretation of such elements. If however it is now assumed that the AspP constituent in *shi-de* forms occurs in a *specifier* position as in (51), such a structure might in fact be expected to constitute an island for the licensing of *wh*-adjuncts, as configurationally it closely resembles a sentential subject structure and such constituents have indeed long been observed to be islands for *wh*-adjuncts (see e.g., Huang (1982)). Here it can be suggested that in order to allow for the legitimate occurrence of *wh*-adjuncts in past tense *shi-de* constructions it has to be assumed that at some derivational point the AspP containing such elements must also occur in some other non-specifier position which does not constitute an island for *wh*-adjunct licensing. The suggestion that the AspP originates as a rightward complement to T⁰ prior to raising to SpecTP combined with the copy-theory of movement (Chomsky (1995)) or simple reconstruction now offers the possibility of explaining the relevant lack of island effects with *wh*-adjuncts here.¹⁸ If it is assumed that the licensing of *wh*-elements in Chinese occurs at the level of LF in some way (either via movement or *in situ* binding), it can be suggested that either the AspP clause reconstructs to its base complement position and any *wh*-adjunct present inside is licensed in this reconstructed non-island constituent, or that *wh*-adjuncts are licensed as part of the copy left in the complement-of-T⁰

position by movement of the AspP. Consequently it can be argued that it is indeed necessary to assume that the AspP originates in complement position before being raised to the surface SpecTP position, and it cannot be suggested that the AspP is perhaps reanalysed as being somehow directly base-generated in the leftward SpecTP position.

A second argument can also be made that the AspP does indeed raise from its underlying rightward complement position to a higher specifier position. An alternative to such an assumption might possibly suggest that the AspP is instead base-generated as a *leftward* complement to T⁰ and does not occur in a specifier position at any point in the derivation. Against such an analysis, which would clearly be a head-final structure out of alignment with the dominant head-initial direction of selection in Chinese, it can be suggested that the AspP arguably needs to occur in a higher specifier position in order for raising and cliticization of *de* to the verb to be possible. Elsewhere cliticization has been regularly found to be movement upwards rather than downwards in a tree; if the optional cliticization of *de* to the verb is also naturally assumed to follow this strong cross-linguistic generalization, it would seem that the AspP containing the verb targeted by *de* cannot be in simple complement position, as this would clearly involve *de* undergoing a *lowering* operation to its target. Rather, it would seem that such a constituent should instead be assumed to be located in a higher position in the tree (such as the SpecTP position suggested) in order for raising of *de* to occur. The derivation suggested in (51) with the AspP constituent originating as the rightward complement of T⁰ and then raising higher to the leftward SpecTP position is then generally supported by a range of phenomena.

Finally in this section, having motivated and defended the structure and derivation in (51), it now remains necessary to explain how such partial structures actually combine with the element *shi* to result in full *shi-de* focus forms and what the status of *shi* currently is in these larger reanalyzed structures. The claim of D-to-T reanalysis with *de* should also attempt to explain why *de* as a hypothetical new instantiation of past tense is not found to occur with every verb having a past time interpretation in Chinese. Approaching these issues, we will suggest that past tense *shi-de* sentences are in fact largely similar to complex perfect tense forms found in English and that recent ideas on the syntax and structure of tense proposed in Stowell (1996) allow for a modeling of *shi-de* forms which accurately and clearly reflects both the syntactic properties and the interpretation of *shi-de* sentences.

An important piece of information concerning the status of *shi* in *shi-de* sentences comes from the way that A-not-A questions are composed.

As illustrated in (56), significantly it is the element *shi* which is doubled in such question forms:

- (56) ni shi-bu-shi zuotian lai de?
 you SHI-NEG-SHI yesterday come DE
 'Is it yesterday that you arrived?'

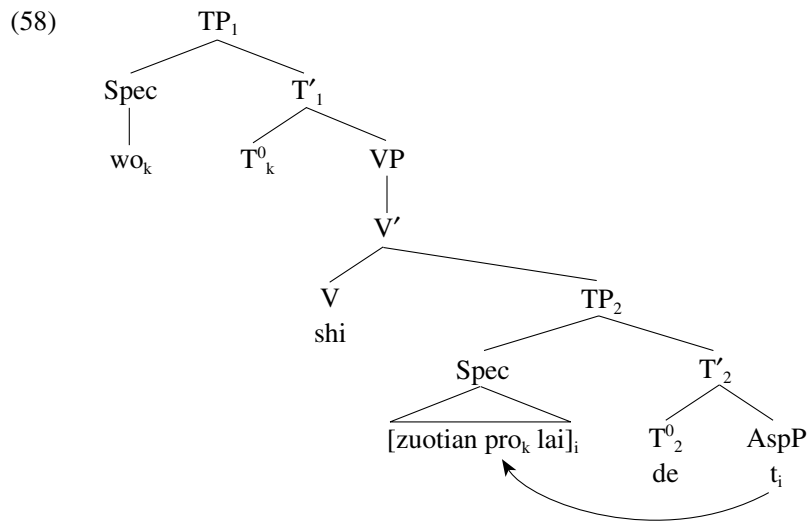
This patterning is potentially important and revealing, as elsewhere it is generally found that the element which is repeated in A-not-A forms is a verb/auxiliary which is interpreted as being finite (i.e., the doubled element is the highest verb/auxiliary in a finite clause). Examples such as (56) therefore seem to suggest that *shi* is both verbal and also finite not only in non-past *shi-de* forms where its complement is assumed to be a DP, but also still in past-time interpretations where it has been argued that *de* heads a TP constituent. This hypothetical co-occurrence of two finite specifications in *shi-de* structures (with both *shi* and *de*) is clearly in need of some explanation and possibly might seem to challenge the past tense analysis of *de*, suggesting that *shi* rather than *de* should be considered to be the head of TP in *shi-de* sentences. Here we believe that a comparison of *shi-de* structures with English *have -en* perfect tense forms such as (57) and in particular Stowell's (1996) analysis of the perfect tense now offers a simple and natural solution to this apparent problem:

- (57) a. John has eaten all the doughnuts.
 b. Mary has bought War and Peace.

Set within a broad new theory of the syntactic structure of tense, Stowell (1996) suggests that the English perfect tense form made up of the verb 'have' together with a second inflected verb is in fact a complex tense construction which critically comprises *two* finite tense forms, rather than a single tense + participial form. Stowell argues that the interpretation of (present) perfect forms such as (57) is that a past event described by the *-en*-inflected lexical verb is related to a present speech time encoded in the auxiliary *have*, and that syntactically *both* lexical verb and auxiliary project discrete instantiations of tense in the complex structure, present with the auxiliary and past with the lexical verb. The result of the presence of the two tense forms is that the event described by the lexical verb is interpreted as having taken prior to the speech time (hence in the past) and to have relevance to the (present) speech time.

Turning back to Chinese *shi-de* sentences, such an analysis of the perfect tense can be suggested to be exactly what is necessary to capture the apparent syntactic properties and interpretation of *shi-de* forms. Having seen

above and in earlier sections that both *shi* and *de* individually show signs of being [+finite] and consequently associated with discrete tense positions, it can now be pointed out that *shi-de* sentences significantly also have interpretations similar to English perfect forms in depicting past time events which are stressed as having clear relevance to/in the present/speech time. Such aspects of the *shi-de* construction can be simply captured if it is assumed, following Stowell's analysis of the English perfect, that both *shi* and *de* in fact project tense positions and TP constituents and that the past tense encoded in *de* is embedded under a present tense specification with *shi* as in (58) below:^{19, 20}



Such a structure not only licenses the A-not-A patterning found, *shi* being associated with the structurally higher [+finite] T⁰ and therefore naturally being the element repeated in A-not-A forms, the embedding of past-time TP₂ under present-time TP₁ can also be argued to naturally encode the interpretation of strong present relevance of a past event. (58) furthermore provides an explicit answer to the initial question of how *shi* and the *de*-headed TP combine together: *shi* as a higher verbal/auxiliary element in such structures selects for the TP headed by *de*.²¹

Considering the second question, why *de* as a new instantiation of past tense is not found to occur with every verb having a past time interpretation, the analysis in (58) can be suggested to offer the relevant answer here, and a TP headed by *de* will appear only if it is indeed selected by the element *shi* (or a phonetically null equivalent, as *shi* need not always be overt in *shi-de* structures). In this sense the occurrence of *de* in T⁰ will

be very similar to that of the English past tense form *-en* in perfect constructions such as (57), *-en* only surfacing as an instantiation of past when selected by the auxiliary verb 'have'. Concerning the element *shi* itself, given its regular association with the creation of a cleft-like focus interpretation, *shi* will in turn be selected from the lexicon only when a focus interpretation is indeed required, and in this sense will be similar to the common (optional) use of the English auxiliary verb 'do' to cause readings of emphatic focus in examples such as (59):²²

- (59) a. I do like this cake.
 b. Jane does know how to write a good letter.

The distribution, syntax, and interpretation of *de* as a past tense morpheme can consequently be given a plausible account in line with recent assumptions about the structure of complex tense forms and the properties of similar elements in other languages. Having earlier discussed how various other aspects of the syntax of past tense *shi-de* forms can also be given an essentially uniform explanation under the assumption of D-to-T reanalysis and the conversion of a CNP-type structure into a simple TP constituent, we now close the paper in section 5 with some reflection on D-to-T reanalysis as a general theoretical phenomenon together with a consideration of how such reanalysis provides a useful insight into potentially available paths of grammaticalization.

5. SUMMARY: D-TO-T AND PATHS OF GRAMMATICALIZATION

The primary aim of this paper has been an attempt to show how it may be significantly possible for a D^0 element from the nominal domain to undergo reanalysis in the clausal functional structure as a T^0 element given appropriate circumstances. To this end we have investigated the status and syntax of clause-final *de* in *shi-de* cleft sentences and gradually arrived at a series of relevant conclusions. Section 2 of the paper began by arguing that the optional repositioning of *de* adjacent to the verb together with the necessary past time interpretation of the verb in such configurations strongly suggests that *de* instantiates the category of past tense when cliticized to the verb. As non-past interpretations of *shi-de* forms are however possible with *de* in post-object position, section 3 concluded that *de* must also be able to instantiate a category distinct from tense and that speakers consequently allow for a dual analysis of the element *de*. Noting that the most likely source of this non-past *de* is the 'nominal-modifying' *de* found in CNP type structures, it was suggested that non-past *shi-de* sentences may still naturally relate to a CNP type structure with a phonetically empty head,

and that such an assumption allows for a simple account of noted restrictions on *wh*-adjunct and adverbial occurrence in non-past interpretations. The lack of similar restrictions with post-object past time interpretations of *de* then resulted in the conclusion that *de* in such instances, like immediately post-verbal *de*, has also undergone reanalysis as the past tense head of a TP and that the optionality in placement of past tense *de* is essentially due to the cliticization of *de* targeting two potentially different hosts V and AspP, clitics elsewhere frequently showing such optionality in their attachment. Section 4 finally motivated the formal syntax assumed to underlie the reanalysis of *de* in T⁰, and argued that this is actually reanalysis of an original D⁰ element, resulting in the creation of a complex new tense form similar to the English perfect. Ultimately then the unfolding analysis leads to the critical idea of D-to-T conversion and the hypothetical reinterpretation of a DP nominal structure as a clausal TP constituent. Such a general analysis not only has the noted advantages of being able to account for the non-homogenous behaviour of *shi-de* sentences (i.e., differences in the positioning of *de*, temporal interpretation, and associated restrictions), attributing these to a dual analysis (potentially) underlying *shi-de* forms, but also, as will be argued below, that there are reasons for believing the reanalysis of a D⁰ as a T⁰ is a category switch which is also rather natural and not unanticipated.

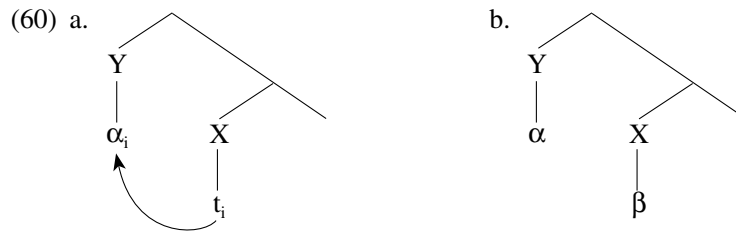
In recent years important works such as Abney (1987) and Szabolcsi (1994), along with many others, have repeatedly suggested that there is a significant similarity and parallelism in the internal structure of DPs and clauses, with various functional elements in the nominal domain potentially corresponding to similar elements in the clausal domain. Considering the functional roles which are in particular effected by D⁰ and T⁰ heads in the nominal and clausal domains, these can importantly be noted to be fundamentally very similar, as D⁰ and T⁰ are both heads which host deictic elements providing (relative) reference to their respective complement constituents. Because of this basic equivalence relation and similarity in role, in D-to-T reanalysis it can therefore be suggested that the definite reference-fixing property of a D⁰ element simply comes to be reinterpreted in the locus of temporal reference and definiteness in the clause, the T⁰-position, and that such a categorial reanalysis is consequently quite natural as a change, a functional element with a basic deictic orientation from one domain effectively just re-applying its underlying deictic/referential function in/to a new second type of domain. Reconsidering the particular case of *de* in the *shi-de* construction, it was earlier noted that use of this element consistently results in an interpretation in which the past or future occurrence of some background event is heavily presupposed and there-

fore constitutes knowledge which the speaker assumes is shared by the hearer. In this sense the use of *de* consequently signals and marks the background event encoded in the predicate as indeed being *definite* (i.e., identified, unique, shared knowledge) and so functions in a way which is semantically similar to other D⁰/determiner elements. In the D-to-T reanalysis argued for in *shi-de* forms, it can therefore be suggested that this definite reference-marking function present with *de* is simply reinterpreted in the clausal domain as applying in a purely temporal manner: *de* naturally comes to be understood as marking past tense, deictically fixing the reference of its clause as being identified at some point prior to the present/speech time.

If D-to-T reanalysis is then indeed a rather plausible type of categorial switch given the appropriate conditions, this raises the question of whether it is a reanalysis which might in fact have occurred in other instances besides *de*. Here there are indeed two other cases which can briefly be mentioned which we believe may also qualify as occurrences of D-to-T conversion, adding further potential support for such a possibility in general. The first of these relates to the Venezuelan language Panare studied in Gildea (1993), where it is significantly found that demonstrative pronouns occur as functional linking elements between subject DPs and associated predicate nominals. Gildea points out that the proximal/distal deictic orientation of such linking demonstratives may often be different from and apparently in conflict with that of other demonstrative elements present in predicate nominal constructions. Gildea argues that in such cases there actually is no conflict in spatial deixis and suggests that the linking 'demonstratives' have now in fact been reanalysed as copulas, with their original proximal and distal deixis value now giving rise to interpretations of future time and past time reference rather than any spatial deixis. If Gildea is correct here, and demonstratives are assumed to be elements of type D⁰, the Panare predicate nominal construction can then similarly be argued to be an instance of D-to-T reanalysis. A third possible case of D-to-T conversion may in fact have occurred in English in the apparent reanalysis of the demonstrative element 'that' as a clausal complementizer. Pesetsky and Torrego (2000) present a range of syntactic arguments and evidence for the assumption that the English complementizer 'that' is in fact synchronically first base-generated in T⁰ and then subsequently raised up to C⁰. If Pesetsky and Torrego are indeed right and 'that' is an instantiation of T⁰ as well as C⁰, given that such an element is known to have developed from a demonstrative/D⁰ this offers once again the clear possibility of a further case of D-to-T reanalysis.²³

The conclusion that D-to-T conversion is a reanalysis which has occurred

in Chinese and possibly also elsewhere can finally now be noted to have consequences for general theories of categorial reanalysis and the mechanisms which underlie and permit grammaticalization phenomena. In recent work on grammaticalization, Simpson (1998), Simpson and Wu (1999, 2001), and Roberts and Roussou (1999) all argue at some length that grammaticalization is a process of reanalysis most commonly resulting from *movement* within a syntactic tree. These works suggest that if a lexical element α regularly undergoes movement from an original position X to a higher position Y in the functional structure projected over X, then over time the element α may eventually come to be reanalysed as a simple instantiation of Y rather than X. When such grammaticalization and reinterpretation of the lexical element α occurs, α will subsequently be base-generated directly in the higher functional head (or alternatively specifier) position Y as indicated in (60), and the lower position X will be instantiated by a new lexical element (β in (60b)):



Such a general process of movement-dependent reanalysis and grammaticalization is also noted to occur when α is in fact already a functional (rather than a lexical) element, the result in such cases being that α becomes regrammaticalized as a higher head/ X^{MAX} occurring in the functional structure. With the creation of new tense/auxiliary morphemes, the natural expectation is that such elements will also follow this common path of grammaticalization and arise from the reanalysis of lower light verbal elements raised into the functional structure dominating VP. While such reanalysis does seem to regularly occur as expected (as, for example, in the common development of future tense verbs from original lexical verbs of desire such as English *will*, etc.), the patterns found with *de* and the creation of a new past tense morpheme from a functional element originating in the nominal domain significantly now seem to offer good evidence for the general availability of a second quite different path of grammaticalization. This additional route of categorial reanalysis does not result from any movement and reanalysis within a single lexical-functional domain, but instead critically involves the reanalysis of a functional category from one lexical-functional domain to a functional head in a discrete second type

of domain, a kind of ‘lateral’ *cross-domain* reanalysis/grammaticalization. Although such reanalysis may (perhaps) be more restricted in its occurrence than the alternative movement-dependent grammaticalization, it can nevertheless now be argued to constitute a genuine possibility when assisted and permitted by properties of the embedding syntactic structure, as indeed seen with *de*, where a null-headed CNP/clausal nominalization (by hypothesis) allows for reinterpretation as a simple clause headed by *de* in T⁰. The *shi-de* paradigm and the reanalysis of *de* consequently allows for a broader insight into general mechanisms of grammaticalization. Finally, D-to-T conversion also allows for certain speculation on possible constraints on the process of cross-domain reanalysis. If there does indeed exist an underlying correspondence relation between functional heads in different types of lexical-functional domains, the occurrence of D-to-T reanalysis may suggest that a natural restriction on lateral grammaticalization linking elements in such domains may be that this is an operation which will be possible only between functional heads which stand in a formal equivalence relation. Precisely how the various functional heads in different domains may parallel and relate to each other can only be determined by much further research; however, the obvious similarity of D⁰ and T⁰ elements in their reference-providing functions suggests that these two elements at least should be considered to be functional equivalents and that it is this parallelism in role and correspondence relation which has indeed licensed conversion from one domain to the other.^{24, 25}

NOTES

¹ *Shi-de* sentences may also allow for pseudo-cleft type interpretations if the sequence following *shi* is understood to be a relative clause with a deleted head noun co-referential with the subject preceding *shi* (hence *ren* ‘person’ would be understood as being deleted from the position following *de* in (1)). Here we do not examine the alternative pseudo-cleft interpretation of examples such as (1), assuming this to correspond to a rather different syntactic structure from regular *shi-de* forms.

² As, for example, in Chiu (1993), with LF movement of the focused XP to Spec-ShiP, Huang (1982) with *shi* as an adverb undergoing LF raising together with the focus, and Shi (1994) for a similar LF-related idea.

³ As heavy/long NPs are most likely to be descriptions of *new* referents and hence natural foci, the critical property underlying rightward NP-shift to a sentence-final position would seem to be that a shifted NP is indeed *focused*. Where languages may allow for shorter constituents such as pronouns to be focused, this may perhaps also allow for such elements to undergo NP-shift and the ‘heaviness’ will show up as increased stress on the pronoun.

⁴ Note that the contrast between (8) and (9) again indicates that the neutral underlying base form should be (4a) rather than (4b).

⁵ A simple example of this given in Hopper and Traugott (1993) concerns the development of the English connective ‘since’ which originally encoded only a temporal relation between two clauses as in (i):

- (i) Since I started playing the lottery, I have won four times.

Later on a *causal* relation between the two clauses became a common conversational implicature:

- (ii) Since Yeltsin came to power, there has been nothing but economic trouble.

Currently 'since' may sometimes also be used with only a causal meaning simply because of the long-term strengthening of this implicature, as seen in (iii):

- (iii) Since you know about economics, can you give me a hand?

A similar story underlies German *weil* 'because', which developed from a relative to the English noun 'a while' (German: *eine Weile*); however, unlike 'since', *weil* may now no longer be used with a temporal meaning and can only encode causality (see again Hopper and Traugott (1993)).

⁶ Orthographically, it can be noted that *de* in relative clauses, possessive forms and *shi-de* sentences are also written with the same Chinese character.

⁷ The interpretational function that *de* has in marking the background event appears to have another consequence too. A reviewer points out that when the focus of a *shi-de* sentence is the verb alone following *shi*, it is not possible for *de* to undergo movement to the verb, as shown in (i):

- (i) * zuotian wo shi mai, bu shi mai de piao
 yesterday I BE buy not BE sell DE ticket
 intended: 'Yesterday I *bought* the ticket, I didn't *sell* it.'

Informally, the unacceptability of forms such as (i) indicates that the element which is directly responsible for marking of the presupposed background (i.e., *de*) cannot optionally be moved to attach to and mark the direct focus, which is instead marked and identified by the element *shi*. Intuitively (though still informally), the attachment of a *background/old information* marker to an element which is the sole *focus/new information* can be taken to result in a potentially confusing/contradictory surface signal which can be best avoided by simply leaving *de* unmoved in S-final position (where it is acceptable). Many thanks to the reviewer for observation of this point.

⁸ Although the precise connection between nominalization and presupposition certainly requires more formal understanding, one can note that it is nevertheless a phenomenon which surfaces in a wide range of languages in different ways. For example, in Thai, Japanese, and various other languages one finds that predicates which embed *factive* complements (whose content is hence definite and presupposed) may syntactically nominalize such clausal complements (in Thai with the nominalizer *thii*, in Japanese with *no*), whereas non-factive clausal complements are embedded as simple (non-nominalized) clauses.

⁹ Or alternatively a headless clausal nominalization; in the text we will generally pursue the former CNP possibility, and note that assuming the latter headless nominalization analysis may perhaps not lead to any very different results.

¹⁰ The alternative is to assume there is no N-head present and there is just a simple clausal nominalization preceding *de* in *shi-de* forms as noted earlier. However, the assumption that there is a CNP analysis with a phonetically null N-head has the advantage of allowing for an account of the unacceptability of *wh*-adjuncts in non-past interpretations of *shi-de* forms as discussed in section 4, CNPs being clear islands for *wh*-adjuncts elsewhere. As it is not clear that clausal nominalizations would necessarily instantiate islands for the interpretation/licensing of such elements, this would seem to favor the CNP analysis over a bare clausal nominalization approach.

¹¹ Here it can be noted that where a similar light N does have phonetic content in Burmese and a similar kind of reanalysis appears to be occurring, the light N undergoes 'fusion' with the T⁰ element, collapsing as a single morphological form. As pointed out in examples

(31) and (32), in cleft forms similar to Chinese *shi-de* sentences the light N *haa* ‘one/thing’ collapses with the preceding T⁰ morpheme *teh* to result in *taa*. Significantly, when this happens, the result cannot be optionally separated out into *teh* and *haa* (**teh haa*) and only the fused form *taa* occurs. This is unlike the behavior of *haa* elsewhere with D⁰ demonstrative elements where the fusion of the D⁰ *dii* and *haa* is quite optional and allows for either of the forms in (31), repeated here as (i):

- (i) *dii haa* ‘this (one)’
daa ‘this (one)’

If a nominal-based cleft construction is indeed undergoing reanalysis in Burmese in a way similar to Chinese, it can be argued that part of this reanalysis is the elimination of the light N via a process of incorporation of the N into the D⁰ before its reinterpretation as a (new) T⁰ element. Chinese, which does not have the problem of the need to re-interpret any phonetic material associated with a light N can perhaps just eliminate such an element without any prior syntactic N-to-D incorporation being necessary.

A similar kind of fusion may however have occurred elsewhere in classical Chinese, giving rise to modern Chinese *-zhe* ‘(the) one who V’s’ as in *ji zhe* ‘reporter (one who reports/records)’. One can speculate that here some nominal element incorporated into the classical Chinese D⁰ *zhi* (modern Chinese *de*) changing the vowel quality of *zhi* and resulting in a new complex fused/collapsed element.

¹² This of course indicates the conclusion that Chinese is a language which has ‘special’ clitics, i.e., clitics which undergo movement and repositioning. Such a suggestion has in fact been previously made in Tang (1990) about the element *de* in descriptive and resultative constructions, which Huang (1988) notes occur in early Chinese in forms parallel to (i) and (ii). Tang (1990, 250) suggests that these are formed via movement of the clitic *de* over the objects *shu* and *du* to the verb:

- (i) *du* [-*de* *shu* *duo*]
 read DE book many
 ‘to read a lot’
- (ii) *zhong* [-*de* *du* *shen*]
 get DE poison deep
 ‘to be seriously poisoned’

A similar implication that *de* in modern-day resultative constructions may be attached to the verb via cliticization from a non-adjacent position in a lower clause is present in work in Li (1998), who convincingly shows that the post-*de* ‘subject’ *Lisi* in *de*-resultatives embedded by transitive verbs such as in (iii) is actually the object of the higher clause. If it is then assumed that *de* originates as the complementizer of the lower clause, it has to be concluded that it reaches its surface position via cliticization movement over the object of *kua* to the verb *kua* itself:

- (iii) *Zhangsan kua-de Lisi dou bu xiang gan huor.*
Zhangsan praised-DE Lisi all not want do work
 ‘Zhangsan praised Lisi to the extent that she didn’t want to do any work.’

¹³ Note that the cliticization of past tense *de* to the verb resulting from a base structure such as (53) will involve cliticization of *de* from the head T⁰ to an element (the verb) inside SpecTP. Cliticization of this type to a position contained within a higher constituent has been observed to occur in a number of instances elsewhere, for example Serbo-Croat where pronominal and auxiliary clitics attach to an element inside the constituent in SpecCP as in (i). Here the clitics *mi* and *je* occur encliticized to the demonstrative heading the DP in SpecCP:

- (i) [DP Taj-mi -je pesnik] napisao knjigu.
 that me AUX poet wrote book
 'That poet wrote me a book.' (Spencer 1991)

It can also be noted that there is further clear optionality of attachment here and the same clitics may be attached to the right-edge of the DP instead of inside the DP:

- (ii) [DP Taj pesnik] -mi -je napisao knjigu.
 that poet me AUX wrote book

¹⁴ In order to account for the possibility that *de* may occur either directly attached to the verb or to the V+IO complex, one can assume that indirect object incorporation is not always forced to occur. Note also that there are additional restrictions on the acceptability of DOCs combined with *de* which relate to complex constraints on the relative definiteness values of direct and indirect object. These we do not attempt to investigate here for simple reasons of space.

¹⁵ Note that similar attempted sequences of *V-le-de* in relative clauses are also ill-formed, again suggesting that *de* as a clitic cannot attach to a base suffixed with *-le*:

- (i) [wo qunian mai/du/bianji(*-le)]-de shu
 I last year buy/read/edit LE DE book

¹⁶ If the clitic-based account of the ill-formedness of **V-le-de* sequences suggested in the text is on the right track, one might wonder whether *de* can occur cliticized to a verb suffixed with the element *guo*. Here one potentially important difference which can be noted between *le* and *guo* is that the latter is an element which can be pronounced either with its original tone 4, or fully destressed and without any tone. Interestingly, a range of informants have indicated to us that if *de* is attached to a verb suffixed with *guo*, they have a clear preference for *guo* to be pronounced with its tone 4. This is clearly what is expected if past tense *de* does need to cliticize to a strong tone-bearing syllable, as hypothesized here.

¹⁷ There is also a second rather different way to attempt to account for the contrast in (54a,b) which can be mentioned here. It could be that (verbal) *le* is in fact obligatorily interpreted as a past tense marker in matrix clause environments, as argued at length in Wu (2000, 2001). In licit [V-le Ob de] sequences such as (54b) one could then suggest that speakers actually allow for *de* to occur as a D⁰ in the earlier non-past-tense structure (50), and there would be no conflicting overlap in the values of *le* and *de*; whereas in sequences such (54a), overt movement of *de* to the verb would be a clear sign of reanalysis of structure (50) as structure (51), and *de* would then necessarily have to be interpreted as past tense. As only one past tense element should be able to occur per T⁰/TP, V-le-de sequences such as (54b) with two morphemes both requiring the same past tense interpretation will be illegitimate, and one of the past tense elements will fail to be licensed in the structure. Potential support for such an alternative approach may perhaps be provided by the possibility that there is actually certain variability in the acceptability of V-le-de sequences both in *shi-de* sentences and in relative clauses. This variability shows signs of relating to a set of 28 verbs identified by Lü (1980) which have a different behavior from other verbs when combined with (verbal) *le*, as examined in Sybesma (1999). Verbal *le* with these 28 verbs is suggested in Sybesma (1999) and also Wu (2000) to be available for use as a simple marker of completion, and does not necessarily have any other perfective aspect or past tense interpretation. Interestingly here, in preliminary investigations informants have indicated to us that V-le-de sequences created with verbs from the group of 28 are felt to be more acceptable than V-le-de sequences built with verbs which do not belong to this group, both in relative clause structures and *shi-de* sentences; hence examples such as (54b) employing a verb such as *mai* 'sell' (from Lü's group of 28) are felt to be better than (54b) using *mai* 'buy' (which does not belong to the group of 28). This could be explained in the following

way: When verbs from Lü's group of 28 are used, *le* can occur as a marker of simple completion (as in Sybesma (1999), Wu (2000)), and *de* cliticized to the V-*le* unit can be licensed in its interpretation as past tense. When verbs from outside the group of 28 are used however, *le* can only be interpreted as past tense not completive aspect (following Wu (2000)); if *de* is cliticized to the verb this will result in the presence of two past tense morphemes where only one is licensed to occur. Certain further investigation will however be needed to see how consistent this interesting patterning may be and whether such an account is to be preferred to the account of (54) outlined in the main text.

¹⁸ For arguments that clausal-type constituents obligatorily reconstruct see Heycock (1995) and also Huang (1993).

¹⁹ Note that TP here actually is a simplification of the tense structure proposed in Stowell's works, but sufficient to represent the basic intuition here.

²⁰ The subject in the lower TP/VP is suggested to be base-generated as a *pro* in (58), but as (i) below shows, in other cases the lower subject may be overt, showing that it can be lexicalized:

- (i) Zhangsan shi Mali peng-huai ta-de-che de.
 Zhangsan BE Mali hit-damage he-DE-car DE
 'Zhangsan had Mali crash into his car.'

More frequently however, the lower subject will indeed be a *pro* when it is not in focus and is instead part of the presupposition due to the general preference for the representation of old information with phonetically null elements wherever possible; cf. the Avoid Pronoun Principle (Chomsky (1981)). Consequently, the lower subject will not be overt in *shi-de* sentences where an adverb is in focus following *shi* as in (58). However, if the lower subject is itself in focus and co-incidentally co-referential with the subject of the higher TP, it can and will be overt, as in (ii):

- (ii) (Mali shi Lisi peng-huai ta-de-che de, keshi) Asi shi ta-ziji
 Mary BE Lisi crash-damage she-DE-car DE but Asi BE he-self
 peng-huai ta-de-che de
 crash-damage he-DE-car DE
 'Mary had Lisi crash into her car, but Asi himself crashed into his car.'

Many thanks to a reviewer for prompting this clarification of the lower subject's status.

²¹ See also Huang (1990) for claims that *shi* is essentially an auxiliary verb in *shi-de* sentences.

²² For recent formal discussion of how focus is syntactically encoded with *shi* and the structural conditions which restrict the selection of focused elements in *shi-de* sentences, see Wu (2000).

²³ A fourth potential case of D-to-T conversion we have very recently become aware of is the creation of the old Japanese direct past tense marker *-ki*. Bjarke Frellesvig (p.c.) confirms to us that this element may well have developed from a proximal demonstrative D⁰.

²⁴ For further evidence of the close relation of D⁰ and T⁰ elements see also Lecarme (1996), where it is suggested that demonstratives in Somali give rise to temporal interpretations and may even be coming to encode tense *within* DPs.

²⁵ Note that in a further development of the present paper, Simpson (to appear) suggests that although Chinese *de* has allowed for re-analysis as an instantiation of T⁰ (because of the various patterns observed in the present paper), there may be arguments that in certain instances *de* has also developed a stage further and come to instantiate the higher category of Mood as well. The cross-linguistic/comparative reason for this is that there are constructions similar to certain *shi-de* forms in Japanese and Korean where evidence suggests that nominalizer-type elements have undergone reanalysis as high-clausal functional heads

primarily connected with evidentiality. Because these new verbal morphemes occur suffixed outside other overt tense suffixes, the Mirror Principle and the semantic connection of these morphemes to evidentiality suggests that they should be analyzed as instantiating the category of (evidential) Mood. One relevant difference between the Japanese/Korean constructions and common Chinese *shi-de* forms is however that the regular cleft-focus type interpretation present in Chinese *shi-de* forms is not a necessary feature of the related Japanese and Korean constructions. In some instances though, Chinese *shi-de* forms may in fact also occur without any obvious cleft-focus interpretation in a way that is very similar to the interpretation found with Japanese and Korean, as shown in (i):

- (i) wo mingtian shi yao qu Beijing de.
 I tomorrow BE want go Beijing DE
 'Tomorrow I want to go to Beijing.'

If such forms really are equivalent to the constructions found in Japanese and Korean, and if it is correct that the nominalizer-elements in the latter languages instantiate evidential Mood, quite possibly *de* in non-cleft sentences such as (i) might also appropriately be analyzed as instantiating Mood. Such forms could be hypothesized to have developed as an innovation out of the more frequently attested cleft-focus construction through a potential weakening/bleaching of *shi* as a focus-tense head and through *de* allowing itself to be optionally reanalyzed in the Mood position above T⁰ in an occurrence of the head-movement type grammaticalization process described in the text and schematized in (60). If this is reasonable, and if *de* in such non-cleft cases can be generated as an instantiation of just the higher category Mood, it may also explain why adverbs preceding *shi* in such non-past, non-cleft-focus instances might seem able to modify the predicate following *shi* for various speakers, as in (i) above and (ii) below. Elsewhere it was noted that such adverbial modification is generally not a possibility in non-past *shi-de* forms as the constituent following *shi* behaves like an opaque CNP island. In (i) and (ii) (for those speakers who accept such structures), it can therefore be suggested that *shi* selects for a non-opaque MoodP which allows for adverbial modification from outside:

- (ii) wo mei-tian dou shi yiding dei qu Beijing de.
 I every-day all BE definitely must go Beijing DE
 'I have to go to Beijing every day.'

For further discussion of Chinese *shi-de* in relation to Japanese and Korean and the suggestions outlined here, see Simpson (to appear). Also note that forms such as (i) and (ii) are not immediately accepted by all speakers, and that the non-cleft use of *shi-de* may therefore not have developed from the basic cleft usage in the same way for all speakers, so certain caution may be necessary here. Finally, the hypothesized non-past use of *de* as a separate higher Mood head can in some sense be likened to the secondary use the English past tense morpheme *-ed* has an optional instantiation of non-past irrealis/conditional meaning in forms such as: 'If I walked home right now, I would get there by 5 o'clock.' Although *-ed* does have this additional irrealis/conditional use, its core and basic meaning is nevertheless still taken to be [+past], just as reanalyzed *de* is indeed here argued to have [+past] as its most basic/common, redefined meaning. Many thanks to a reviewer for prompting us to include this further discussion.

REFERENCES

- Abney, Stephen (1987) *The English Noun Phrase in Its Sentential Aspect*, PhD dissertation, MIT.
- Baker, Mark and Kenneth Hale (1990) "Relativized Minimality and Pronoun Incorporation," *Linguistic Inquiry* 21, 289–297.
- Bresnan, Judith and Samuel Mchombo (1987) "Topic, Pronoun, and Agreement in Chichewa," *Language* 63, 741–782.
- Cao, Guangshun (1987) "Yuqici *LE* Yuanliu Qianshuo [The origin of the particle *LE*]," *Yuwen Yanjiu* 2, 10–15.
- Chao, Yuen-Ren (1968) *A Grammar of Spoken Chinese*, University of California Press, Berkeley, California.
- Chiu, Bonnie (1993) *The Inflectional Structure of Mandarin Chinese*, PhD dissertation, UCLA.
- Chomsky, Noam (1981) *Lectures on Government and Binding: The Pisa Lectures*, Foris, Dordrecht.
- Chomsky, Noam (1995) *The Minimalist Program*, MIT Press, Cambridge, Massachusetts.
- Dryer, Matthew (1992) "The Greenbergian Word Order Correlations," *Language* 68, 81–138.
- de Francis, John (1963) *Beginning Chinese*, Yale University Press.
- Gildea, Spike (1993) "The Development of Tense Markers from Demonstrative Pronouns in Panare (Cariban)," *Studies in Language* 17(1), 53–73.
- Heycock, Caroline (1995) "Asymmetries in Reconstruction," *Linguistic Inquiry* 26, 547–570.
- Hopper, Paul and Elizabeth Traugott (1993) *Grammaticalization*, Cambridge University Press, Cambridge.
- Huang, C.-T. James (1982) *Logical Relations in Chinese and the Theory of Grammar*, PhD Dissertation, MIT.
- Huang, C.-T. James (1984) "On the Distribution and Reference of Empty Pronouns," *Linguistic Inquiry* 15, 531–574.
- Huang, C.-T. James (1988) "*Ma pao de kuai* and Chinese Phrase Structure," *Language* 64, 274–311.
- Huang, C.-T. James (1990) "Shuo 'shi' he 'you' [On 'Be' and 'Have' in Chinese]," *The Bulletin of the Institute of History and Philology* 59(1), 43–64, Academia Sinica, Taiwan.
- Huang, C.-T. James (1993) "Reconstruction and the Structure of VP: Some Theoretical Consequences," *Linguistic Inquiry* 24, 103–138.
- Kayne, Richard (1994) *The Antisymmetry of Syntax*, MIT Press, Cambridge, Massachusetts.
- Kitagawa, Chisato and Claudia Ross (1982) "Prenominal Modification in Chinese and Japanese," *Linguistic Analysis* 9, 119–153.
- Lecarme, Jacqueline (1996) "Tense in the Nominal System: The Somali DP," in Jacqueline Lecarme, Jean Lowenstamm, and Ur Shlonsky (eds.), *Studies in Afroasiatic Grammar*, Holland Academic Graphics, the Hague, pp. 150–175.
- Li, Charles and Sandra Thompson (1981) *Mandarin Chinese: A Functional Reference Grammar*, University of California Press, Berkeley, California.
- Li, Yafei (1998) "Chinese Resultative Constructions and the Uniformity of Theta Assignment Hypothesis," in Jerome Packard (ed.), *New Approaches to Chinese Word Formation*, Mouton de Gruyter, Berlin, pp. 285–310.
- Lü, Shu-Xiang (1980) "Xiandai Hanyu babai ci [800 words of Modern Chinese]," Shangwu, Beijing.
- Pesetsky, David and Esther Torrego (2000) "T-to-C Movement: Causes and Consequences," in Michael Kenstowicz (ed.), *Ken Hale: A Life in Language*, MIT Press, Cambridge, Massachusetts.
- Paris, Marie-Claude (1979) *Nominalization in Mandarin Chinese*, PhD dissertation, Paris 7.
- Pulleyblank, Edward (1995) *Outline of Classical Chinese Grammar*, University of British Columbia Press, Vancouver.
- Roberts, Ian and Anna Roussou (1999) "A Formal Approach to Grammaticalisation," ms,

- University of Stuttgart and University of Cyprus.
- Shi, Dingxu (1994) "The Nature of Chinese Emphatic Sentences," *Journal of East Asian Linguistics* 3, 81–101.
- Shi, Z. Q. (1989) "The Grammaticalization of the Particle *LE* in Mandarin Chinese," *Language Variation and Change* 1, 99–114.
- Simpson, Andrew (1997) "On the Status of Modifying DE and the Syntax of the Chinese DP," ms., SOAS, University of London, to appear in *On the Formal Way to Chinese Languages*, Chen Sheng Liu and Sze Wing Tang (eds.), CSLI, Stanford, California.
- Simpson, Andrew (1998) "Cross-categorial Grammaticalization in Chinese, Japanese, and Korean," talk given at the 1998 USC Symposium on the Syntax of East Asian languages.
- Simpson, Andrew (2001) "Definiteness Agreement and the Chinese DP," *Language and Linguistics* 2, 125–156.
- Simpson, Andrew (to appear) "The Reanalysis of Nominalizers in Chinese, Japanese, and Korean," to appear in Audrey Li and Andrew Simpson (eds.), *Functional Structure(s), Form and Interpretation: Perspectives from East Asian Languages*, Curzon, London.
- Simpson, Andrew and Zoe Wu (2001) "The Grammaticalization of Formal Nouns and Nominalizers in Chinese, Japanese and Korean," in Nigel Tranter (ed.), *Language Change in East Asia*, Curzon, London.
- Spencer, Andrew (1991) *Morphological Theory*, Blackwell, Cambridge.
- Stowell, Tim (1996) "The Syntax of Tense," ms, UCLA.
- Sybesma, Rint (1999) *The Mandarin VP*, Kluwer, Dordrecht.
- Szabolcsi, Anna (1994) "The Noun Phrase," in F. Kiefer and K. Kiss (eds.), *Syntax and Semantics, Vol 27: The Structure of Hungarian*, Academic Press, San Diego, California, pp. 179–274.
- Tang, Chih-chen Jane (1990) *Chinese Phrase Structure and the Extended X'-Theory*, PhD Dissertation, Cornell University.
- Wu, Zoe (2000) *Grammaticalisation and the Development of Functional Categories in Chinese*, PhD Dissertation, USC.
- Wu, Zoe (2001) "The Re-grammaticalization of Affixes: Verbal *le* as Perfective Aspect and Tense," talk presented at the 2001 conference of the International Association of Chinese Linguistics, University of California, Irvine.
- Zhuangzi Yinde [A Concordance to Chuang-tzu]* (1956) Harvard University Press, Cambridge, MA. Reprinted from Harvard-Yenching Institute Sinological Index Series, supplement no. 20. Peiping: Yenching University Press, 1947.

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