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On Syntactic Analyticity and Parametric Theory

C.-T. James Huang

This paper puts together a range of distinguishing properties of Chinese and considers them in the context of parametric theory, capitalizing on the clustering of these properties that jointly characterize Modern Mandarin as a language of high analyticity, Old Chinese as a language of moderate synthesis, and the modern Chinese dialects in their varying degrees of development towards mild synthesis. It argues that while some properties have been identified in isolation as independent typological properties, given the analyses proposed, they can be seen to fall out as special cases of a larger generalization, as manifestations of the same property of analyticity or synthesis. It is also shown that each distinguishing property may be seen as a result of setting a micro-parameter defined in terms of the nature of a triggering or non-triggering head, as in current research in generative grammar. The typological properties shed light on the nature of parametric variation and change, arguing for the need to see them through the lens of both micro- and macro-parametric theory.

Keywords: parametric theory, variation and change, analyticity, derivational timing

1. Introduction

Modern linguistic theory considers language a product of nature and nurture: the particular grammar of any individual is a ‘linguistic phenotype’ that has grown from a ‘linguistic genotype’ with the nurture of after-birth experience. In the Principles and Parameters (P&P) framework of generative grammar, the linguistic genotype—termed Universal Grammar (UG)—consists of a finite set of principles and a limited number of open parameters whose values are yet to be set by the nurturing effect of the child’s primary linguistic data (PLD). Thus each attained grammar (say G_E and G_C for English and Chinese) is a linguistic phenotype that results when all the parameters have been set in conformity with the PLD. Language variation is thus a function of parametric variation. Nature enables the growth of grammar, at the same time setting the limits of variation.

Studies of language variation, both from the generative tradition and from earlier descriptive approaches, have shown that languages do not vary at random, but within bounds and in patterns. Edward Sapir (1921:120-121) wrote almost a century ago:

[I]t must be obvious to anyone ... that there is such a thing as a basic plan, a certain cut, to each language. This type or plan or structural “genius” of the language is something much more fundamental, much more pervasive, than any single feature of it that we can mention ... All languages differ from one another but certain ones differ far more than others. This is tantamount to saying that it is possible to group them into morphological types.

The fact that languages differ in ways that allow them to be classified into one type or another is the basis of much research on linguistic typology. As an early example, Sapir proposed classifying languages as analytic, synthetic, or polysynthetic (127-128):

An analytic language is one that either does not combine concepts into single words at all (Chinese) or does so economically (English, French). ... In a synthetic language (Latin, Arabic, Finnish) the concepts cluster more thickly, the words are more richly chambered, ... The three terms are purely quantitative—and relative, that is, a language may be ‘analytic’ from one standpoint, ‘synthetic’ from another,

Greenberg’s (1963) seminal work capitalized on the fact that languages typically exhibit *correlating* differences, and it has inspired numerous important other studies in linguistic typology. Many or most of his findings have been offered as descriptive generalizations that obtain “overwhelmingly beyond chance frequency.” Together, the aggregation of correlating differences enables one to talk about languages types.

In generative grammar, much work has sought to derive (and explain) similar generalizations within parametric theory under the P&P framework. Differently from the descriptive approaches, the parametric approach seeks to derive the correlating differences as consequences of setting a parameter to a certain value, rather than listing the correlations as observed. For example, it’s been well known since Greenberg’s work that while VO languages use prepositional phrases, OV languages employ postpositional phrases, in the overwhelming majority of cases. Within P&P, an early Head Directionality parameter (of X-bar theory) was proposed (Stowell 1981, Huang 1982, etc.) that provides for an open choice of head-initial or head-final for an XP, to be determined by the PLD. The correlation between verb-object order and the preposition-postposition choice *follows* from a general application of the head parameter, as a default consequence of setting the parameter as head-final or head-initial, respectively. The widely discussed Pro Drop parameter was formulated, in the work of Rizzi (1982), to derive a cluster of cross-linguistic differences (null subject, inversion, and long subject-extraction) otherwise thought to be completely independent and unrelated. Another early parameter—concerning word order, (non-)configurationality, radical pronoun drop, etc.—was proposed by Hale (1983) and developed in Jelinek (1984), and found its way in parts of Baker’s (1996) Polysynthesis Parameter, which characterizes a range of language types depending on the extent to which arguments are directly linked to verbal morphology. Still another early example was Huang’s (1982) *Wh*-movement Parameter, which distinguishes *wh*-in-situ languages from *wh*-movement languages by ‘derivational timing’: movement takes place either overtly (in Syntax) or covertly (in Logical Form, LF), was shown to derive a number of similarities and differences with respect to certain grammatical constraints among different language types.

These parameters are ‘macro-parameters’ in the sense that they derive large-scale clusters of cross-linguistic differences, greatly reducing the number of possible choices available to the child acquiring a language. More recent research, however, has shifted considerable attention to research on micro-variations and ‘micro-parameters’, following the suggestion of Borer (1984) and Chomsky (1995) that all parameters should be attributed to, and stated in terms of, variations in the nature of relevant lexical items and functional heads. This restriction in the expressive power of parametric theory is motivated by considerations of empirical adequacy and theoretical parsimony, the latter ever more important for current

works in the Minimalist Program (Chomsky 2005, *et seq*). One area where the traditional macro-parameters have proven empirically inadequate is their inability to make finer distinctions among languages or accommodate certain counterexamples observed in less ‘well-behaved’ languages. As a famous simple case in point, both English and French are verb-initial (and prepositional), but a head-initial setting of the Head Parameter does not account for the fact that while the finite verb precedes negation and certain adverbs in French, it must follow them in English. Following the insights of Pollock (1989) and Emonds (1978), Chomsky (1991) [1995 Chapter 2] attributes the variation to a micro-parameter in the derivational timing of V-to-T movement, based on the nature of the tense (or agreement) element T, informally put as follows: In French, the T element is of such nature that it triggers overt V-to-T movement, whereas in English, T is of such nature that V-to-T movement is delayed until LF.

The rise of micro-parametric theory raises the question about the status of macro-parameters and the usefulness of macro-parametric research, an important topic of discussion on the current scene, involving several important contenders (Kayne 2005-2013, Gianollo, et al 2008, Baker 2008, Holmberg 2010, and Roberts and Holmberg 2011, among others). An important issue is whether micro-parameters are able to capture the significant, sometimes large-scale, correlations of parametric differences among languages that the macro-parameters were designed to capture. While some micro-parameters may derive correlating properties, others may have very little effect beyond the original facts that motivate their postulation. Though the jury is still out, it is fair to say that while most (or even all) actual variations may be characterized as micro-variations, there also exist large-scale macro-parametric patterns of variation that must be captured somehow.

The goal of this chapter is three-fold. First, on a descriptive level, I will review a fairly large number of distinguishing properties of Chinese syntax, with special focus on Modern Mandarin (as compared to English), Old Chinese (as compared to Modern Mandarin), and some Modern Chinese dialects (in mutual comparison). It will be shown that these properties cluster—in that they either jointly occur in one language or are jointly absent in another, in a way that bears witness to the fact that languages differ in ways that allow them to remain in ‘a certain cut’. These properties jointly place the varieties of Chinese on a continuum of relative analyticity in the sense of Sapir (1921): Modern Mandarin as a highly analytic language, Old Chinese as a language of significant synthesis, and the modern dialects as representing varying stages of development toward mild synthesis. Some of these contrasting properties have been observed in the literature in isolation or as independent contrasting properties, but their clustering in each language under discussion, once pointed out, provides a clear case for the existence of macro-parameters, of a ‘mega-parameter’ in fact. Secondly, I will show that, in spite of their clustering, the contrasting properties in one language as opposed to another can each be accounted for as a point of micro-variation, attributed to the nature of a particular triggering or non-triggering head, following some version of Minimalist syntactic theory—e.g., the Probe-Goal system of Chomsky (1999, *et seq*). It will be seen that while some contrasting properties of Modern Chinese readily lend themselves to description in terms of high analyticity, some other properties heretofore described in other terms, can be reduced to the same property as well, thus dispensing with some of the macro-parameters proposed in the earlier literature. Thirdly, it will also be shown that the parametric approach to synchronic variation is readily applicable to diachronic change (as amply demonstrated by such works as Roberts & Roussou 2003, and

Roberts 2007), and that the Probe-Goal system, with the notion of relative ‘strengths’ of triggering heads, offers an interesting link to insights from much research on grammaticalization. These points will be laid out in the following sections, and summarized in the conclusion.

2. Analyticity of Modern Chinese syntax

We start by reviewing some salient typological properties of the major lexical categories in Modern Mandarin.

2.1. Verbs and verb phrases

One prominent feature of Chinese grammar that has attracted considerable attention in recent studies is its extensive use of light verbs (see T.-H. J. Lin 2001, 2013), for extensive discussions). Compare the examples in English and Chinese in (1-2):

- (1) a. John telephoned.
b. John telephoned his sister.
- (2) a. Zhangsan **da**-le dianhua.
Zhangsan hit-Perf telephone
b. Zhangsan **da**-le dianhua gei meimei.
Zhangsan hit-Perf telephone to sister
c. *Zhangsan dianhua-le.
Zhangsan telephone-Perf
d. *Zhangsan dianhua-le meimei.
Zhangsan telephone-Perf sister

While in English the noun *telephone* may be denominalized and used as a verb, its counterpart *dianhua* in Chinese cannot. For the verbal usage the noun occurs as an object of a light verb, *da* (literally ‘hit’, but with only the elementary semantics of ‘do’). Similarly, while the following nouns may be used directly as verbs in English: *fish*, *sneeze*, *snore*, *yawn*, etc., in Chinese a light verb in the form of *da* is required:

- (3) *da yu* ‘to fish’, *da penti* ‘to sneeze’, *da hu* ‘to snore’, *da haqian* ‘to yawn’, *da you* ‘to get oil’, *da shui* ‘to fetch water’, *da deng* ‘to use a lamp’, *da maoxian* ‘to knit (do the yarn)’, *da majiang* ‘to do (play) mahjong’, *da zi* ‘to type (do the characters)’, *da lie* ‘to go hunting’, etc.

These examples illustrate Chinese as a language of high analyticity, in the traditional typological scheme that dates back to Sapir (1921). In comparison with Modern Chinese, English is relatively synthetic. And Old Chinese (OC) bears more resemblance to English in

(4) Wu Wang dian Yue Wang, yue . . .
Wu King phone Yue King, saying
'King Wu telephoned (or telegraphed) King Yue, saying that . . .'

(5) Inuktitut:
tavvakiquitiqarpiit
'Do you have any tobacco for sale?'

while other languages would be situated at various intermediate positions in the continuum:

In addition to the light verb construction, Chinese abounds in the use of what has come to be known as the ‘pseudo noun incorporation’ (PNI) construction (after Massam 2001).¹ The PNI refers to the use of verb-object *phrases* denoting actions that are otherwise expressed by simplex verbs in a more synthetic language. In one variety, such examples seem to spell out the typical (or ‘cognate’) verb of a noun:

In another variety, a PNI construction spells out the typical (or cognate) object of a verb:

In both cases, what is important is that while English regularly employs simplex denominal or intransitivized verbs, Chinese must resort to the phrasal strategy of a verb-object phrase, or PNI.³

Another property that sets Chinese apart from English concerns the phenomenon of ‘coercion’ (Pustejovsky 1995), illustrated by the grammaticality of (10a) with an intended meaning of (10b) or (10c).

- (10) a. John began a book.
 b. John began reading/writing/editing a book.
 c. John began to read/write/edit a book.

As pointed out by Lin & Liu (2005), this type of ‘coercion’ does not occur in Chinese:

- (11) a. *Zhangsan kaishi yi-ben shu.
 Zhangsan begin one-Cl book
 b. Zhangsan kaishi kan/xie/bian yi-ben shu.
 Zhangsan begin read/write/edit one-Cl book
 ‘Zhangsan began to read/write/edit a book.’

The verb *begin* appears to be able to ‘eat up’ (i.e., synthesizes with) a prototypical complement verb in English, but its Chinese counterpart *kaishi* does not have this property.

We find a parallel contrast in the expression of causative events or accomplishments as well. English abounds in simplex predicates that express completed events or accomplishments, whereas Chinese typically resorts to complex expressions such as (a) a verb-result compounds, (b) resultative phrases, or (c) periphrastic causative constructions. Chinese simplex verbs are typically not accomplishments. The following three-way contrast among Modern Chinese, English and Italian exemplifies the continuum indicated in (7): whereas English readily admits the synthetic ‘enter, exit’ and the analytic ‘come in, go out’, Chinese requires the analytic strategy and Italian strongly favors the synthetic strategy:

- | | | | |
|------|----------------|------------------------|--------------------------|
| (12) | English | Modern Chinese | Italian |
| | enter, come in | jin lai ‘come in’, *ru | entrare, ??venire dentro |
| | exit, go out | chu-qu ‘go out’, *chu | uscire, ??andare fuori |

Similarly, while English has many verbs that exhibit the unaccusative-causative alternation, in Chinese the corresponding simplex verbs are typically unaccusative. A causative reading would require compounding with a light or contentful action verb, as in (14c-d) respectively.

- (13) a. The window broke.
 b. John broke the window.

- (14) a. chuangzi po-le.
 window break-Perf
 ‘The window broke.’
 b. *Zhangsan po-le chuangzi.
 Zhangsan break-Perf window

- c. Zhangsan da-po/nong-po/gao-po-le chuangzi.
Zhangsan hit-break/make-break/make-break-Perf window
'Zhangsan broke the window.'
- d. Zhangsan ti-po/tui-po/ya-po/qiao-po-le chuangzi.
Zhangsan kick-break/push-break/crush-break/knock-break-Perf window
'Zhangsan kicked/pushed/crushed/knocked the window broken.'

Furthermore, while action verbs in English may often describe accomplishments and telic (bounded) events, Chinese action verbs are purely activity-denoting and atelic. A famous contrast was pointed out by Tai (1984) between English *kill* and Chinese *sha*. The latter, often inaccurately translated as 'kill', actually does not strongly imply death, hence (16) is not contradictory as (15) is.

(15) #John killed Bill several times, but Bill did not die.

(16) Zhangsan sha-le Lisi haoji ci, dan Lisi dou mei si.
Zhangsan kill-Perf Lisi several time, but Lisi all not die

Another contrast obtains with 'incremental theme' verbs (Dowty 1979) like *write* and *eat*. Specifically, with a definite object, *write* has a telic reading (hence compatible with a phrase like 'in 30 minutes'), while its Chinese counterpart *xie* does not. A telic reading for *xie* would require compounding with a result-denoting state (as in (19)):

(17) John wrote the letter in 30 minutes.

(18) *Zhangsan zai 30 fenzhong nei, jiu xie-le nei-feng xin.
Zhangsan at 30 minute in then write-Perf that-CI letter

(19) Zhangsan zai 30 fenzhong nei, jiu xie-wan-le nei-feng xin.
Zhangsan at 30 minute in then write-finish-Perf that-CI letter
'Zhangsan finished writing the letter in 30 minutes.'

In other words, while English action verbs may be telic or atelic, Chinese action verbs are atelic by themselves, though they may be telicized by means of compounding or phrasal combination.⁴ More generally, of Vendler's (1965) verb types, Chinese has the three elementary types only—state, achievement and activity—but not accomplishment.

We have now seen that Chinese verbs exhibit a high degree of simplicity or 'purity' in several ways, with the following prominent properties:

- (20) a. the light verb construction
- b. pseudo noun incorporation
- c. compounds or phrasal accomplishments
- d. verbal atelicity, and
- e. absence of verbal coercion

That these properties all *cluster* within the same language is worth noting, indicating that they represent special cases of a more general character of the language. Indeed, it would be completely surprising if Chinese were, say, rich in light verbs but poor in pseudo noun incorporation, or rich in both light verbs and verbal coercion.

2.2. Nouns and other categories

It is significant that the same high degree of analyticity is fully observed in the nominal domain as well. This is manifested in at least two major ways, in the requirement of (a) a classifier in the context of a numeral quantifier, and (b) a localizer in the context of location-denoting DP. Consider first the classifier requirement:

- (21) *yi ben shu* ‘one Cl book’, *liang zhi bi* ‘two Cl pens’, *wu pi ma* ‘five Cl horse’, *ershiwu ge xuesheng* ‘25 Cl students’, etc.

At an elementary level we can see that what is expressed by a single count noun *book* in English is expressed in Chinese by a phrasal sequence of *ben* + *book*. This situation is not unlike the contrast between English simple verbs like *phone* and the corresponding light-verb constructions in Chinese. Hence the classifier *ben* may be termed a ‘light noun’ in the same sense that *da* is a light verb. The parallel is further exhibited by the selectional restriction between a light noun or verb and its complement. Thus, for example, *ben* selects *shu* ‘book’ but not *xuesheng* ‘student’. Similarly, light verbs with the elementary semantics of DO, CAUSE, and BECOME, etc. differ on the types of complement root VPs they select.⁵

The classifier requirement on a noun in Chinese has another parallel in the verbal domain. It has been suggested (Krifka 1987; Chierchia 1998) that nouns in general have only elementary denotations, i.e., they denote kinds but not individuals (or units of matters).⁶ To denote individual units or members and be counted, they each need to be individuated (or atomized) with the help of a classifier. This is not unlike the fact that Chinese action verbs, as noted above, are atelic and do not denote accomplishments. To be telic, such verbs as *chi* ‘eat’ require quantified objects (such as ‘three apples’ as in note 4) or be complemented by a result (as in *chi-wan* ‘eat-finish’). Thus, atelic verbs are a kind of ‘mass verbs’, just as mass nouns might be termed a kind of ‘atelic nouns’.

Now consider the requirement of a localizer, as when a DP occurs with a location-selecting verb or preposition. Whereas English *arrive at*, *go to*, *from*, etc. directly take DPs as their objects, the corresponding objects in Chinese require the presence of localizers like *bian* ‘side’, *na* ‘there’, *li* ‘inside’, *shang* ‘top’, etc.

- (22) a. They went to John.
b. This idea came from John.
c. Bill stood at the table.
- (23) a. *tamen qu-le Zhangsan-*(nali)*.
they went-to Zhangsan-there

- b. zhe-ge zhuyi shi cong Zhangsan-*(nar) lai de.
this-Cl idea be from Zhangsan-there come Prt
- c. Lisi zhan zai zhuzi-*(pang/shang/xia/hou/qian).
Lisi stand at table-side/top/under/back/front

Again we may think of localizers as a kind of ‘light nouns’, whose presence enables noun phrases to denote locations, much as classifiers enable noun phrases to denote individual atoms of a kind.

We have seen that in both the verbal and nominal domains, Modern Chinese exhibits a consistent pattern of high analyticity over a range of related constructions. Similar observations may be made of other lexical categories as well, such as prepositions and adjectives. By comparison with certain English prepositions, such as *beside*, *above*, *in*, etc., Chinese employs a discontinuous (hence analytic) strategy with a pure preposition *zai* ‘at’ followed by a corresponding localizer or location noun: *zai...pang*, ‘at X’s side’ *zai...shang* ‘at XP’s top’, etc. As for adjectives, it has been suggested that a gradable adjective in English includes an implicit degree morpheme, *pos*, that turns the adjective into a degree-denoting predicate (Kennedy 2007), while the marker *hen* in Mandarin is the overt realization of that morpheme, or an aspectual marker for a gradable adjective (Dong 2005)—hence an auxiliary, or light adjective. Thus, in addition to the list in (20), we have:

- (24) a. numeral classifier for count nouns
- b. localizer for locational nouns
- c. discontinuous prepositions
- d. overt positive degree marker

It is useful to note that, while these distinguishing properties of Chinese are well-known, they have, in the main, been mentioned as if they are independent, unrelated features of the language. Given the above discussion, it should not be surprising why these properties should jointly occur, also together with those in (20) in Chinese, but are jointly absent in English. The clustering of these properties makes it clear that Modern Chinese is consistently more analytic than English, with respect to the structure of every lexical category.⁷

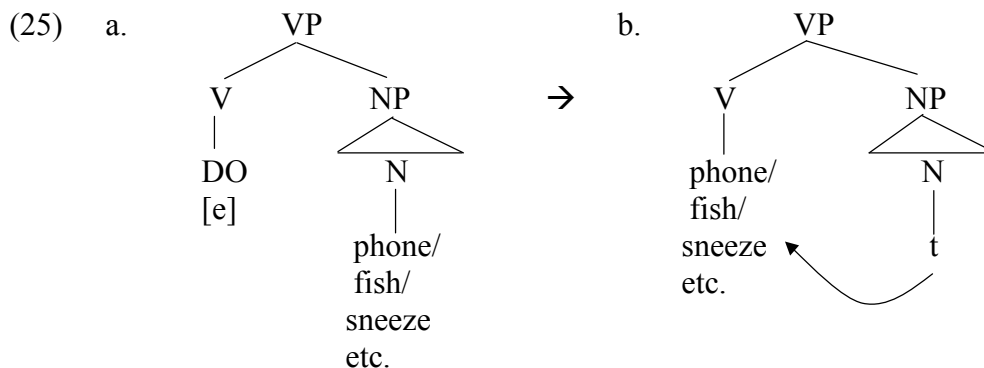
3. Capturing analyticity syntactically:

How do we capture the range of properties that systematically distinguish Chinese from a (relatively) more synthetic language? Within the classical Principles-and-Parameters framework, we might simply propose a ‘analytic-synthetic’ parameter, so that Chinese is [+analytic], and another language may be [-analytic]. Such an approach, however, would be at odds with the requirements of a more restricted, hence more explanatory theory of linguistic variation, and is not acceptable in most current versions of parametric theory. In line with recent thinking and consistent with the Lexical Parameterization Hypothesis of Borer (1984) and Chomsky (1995), I assume that the parametric differences may be attributed to the nature of a number of semi-lexical, light categories that are part of the make-up of full lexical items. Along the general spirit of a checking-theoretic framework

(e.g., the ‘Probe-Goal system’ of Chomsky 2000), let’s assume that grammatical operations are driven by the need to license, or remedy, certain ‘imperfections’ that have appeared on such defective items. A defective category may contain formal grammatical features F that are not fully interpretable (semantically or phonetically) and therefore require licensing in some way by other items. An F feature may be ‘strong’ (or affixal) or ‘weak’. A [+strong] feature F marks a strongly defective head that requires licensing by overt head movement (Move), while a [-strong] feature may be licensed simply under an appropriate matching configuration (Agree), or allow the movement to ‘procrastinate’ until LF, where it takes place covertly (as in Chomsky 1991). In addition, a defective head may (or may not) contain the feature [+EPP], requiring an appropriate phrase XP to move to its Spec position. Languages may differ as to whether certain lexical items have acquired such features of imperfection, and if so, whether the features are [+strong], [+EPP], or not.

There is some intuitive appeal to the idea that grammatical operations are driven by the presence of defective elements. Borrowing (and adapting) an analogy from J. Uriagereka (1998) and Lasnik (2003), we may say that a lexical item becomes defective when it is infected with a virus. If the situation is serious (e.g., +strong, or +EPP), remedy is immediately needed on site (head-movement) or in the immediate neighborhood (movement to Spec), to cure the relevant ailments. If the situation is not as serious, then remedy may be given at a distance (Agree) or delayed until LF (covert movement). The system seems to go well in capturing certain insights from research on grammaticalization, as Roberts & Roussou (2003) and Roberts (2007) have shown.

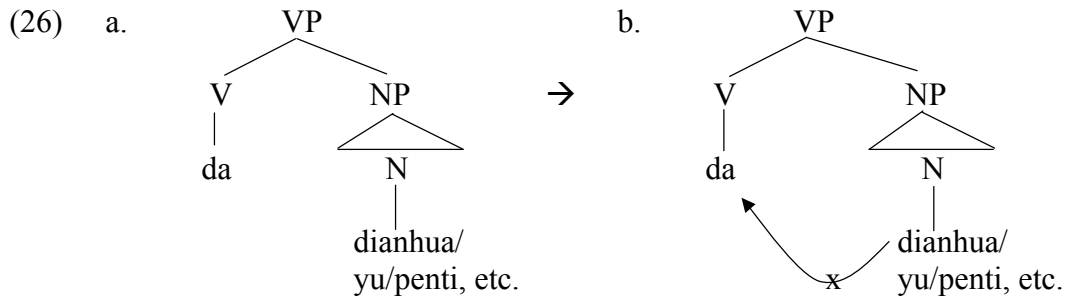
Turning to the English-Chinese contrasts at hand, let’s assume the theory of lexical decomposition as in Hale & Keyser (1993, 2002) and much other work,⁸ where a simplex verb like *phone* (or *fish*, *sneeze*, etc.) in English has the complex structure in (25a) with a light verb that has the elementary semantics of ‘do’ but is phonetically null, and is derived by noun incorporation as depicted in (25b):



Adopting the ‘Probe-Goal’ checking system, the strongly affixal DO needs to be licensed. As such it probes its search domain and identifies a lexical noun like *phone*, *fish*, *sneeze*, etc., as its goal, incorporating it to the position under V, thus forming a verb by noun-incorporation.

The corresponding expressions in Chinese would each have a similar underlying structure, except that the light verb is phonetically non-null, thus blocking noun incorporation. In particular, the light verb is phonetically independent, thus at least not an affix, and not [+strong] in the relevant sense. Therefore it does not trigger movement of the nouns *dianhua*, *yu*, *penti*, etc. It is reasonable to consider the light verb *da* a defective lexical

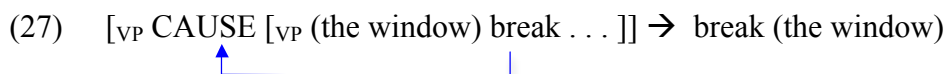
category, hence formal (and ‘uninterpretable’ in some sense) as it has lost its original lexical meaning of ‘hit’. However, since it is not an affix, it at most triggers Agree, but not Move.



Movement under noun incorporation thus gives rise to some degree of syntheticity in English, whereas non-movement (or covert movement) retains full analyticity for Chinese.

As an alternative to the overt light verb *da*, Chinese may employ a proto-typical (or cognate) verb like *bu* or *zhuo* ‘catch’ (for object *yu* ‘fish’) or *chi* ‘eat’ (for object *fan* ‘rice’), etc. The result is a pseudo-incorporation construction. Again, as in fact proposed by Baker (2011), one may assume that pseudo-incorporation does involve true incorporation, but only covertly.

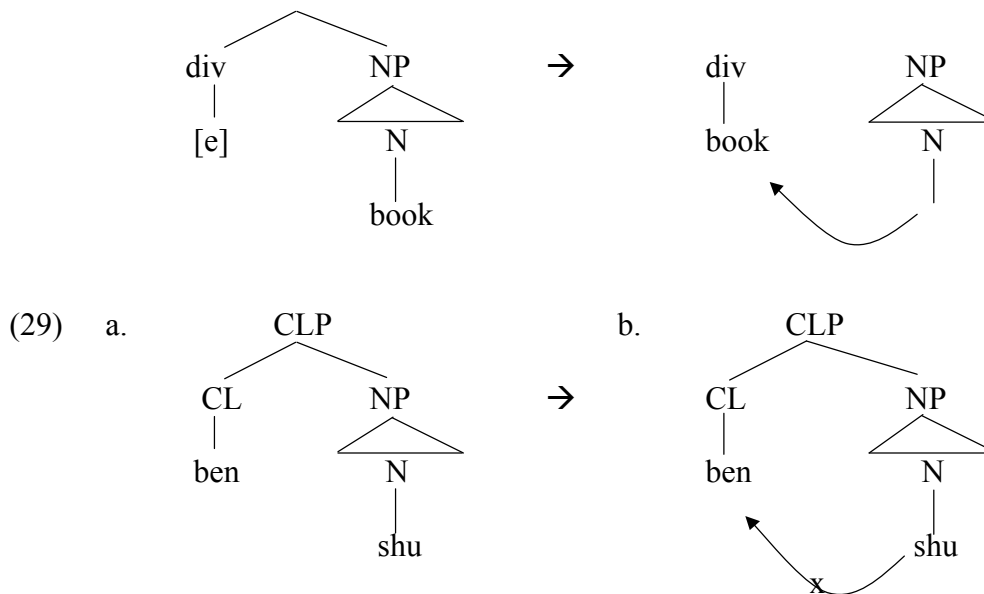
The contrast between English and Chinese with respect to causative accomplishments may be characterized in a similar way. Each causative accomplishment is underlyingly a complex structure headed by a causative light verb. The English causative light verb CAUSE, being phonetically null and a [+strong] affix, triggers verb movement, resulting in a synthetic causative verb:



The Chinese instantiation of CAUSE is an overt light verb like *da*, *nong*, or *gao*, which blocks verb movement and results in compounding as in (14c) above. As an alternative to the light verb, an appropriate action verb like *ti* ‘kick’, *tui* ‘push’, *ya* ‘press’, and *qiao* ‘knock’ may be used, as in (14d), and this accounts for the widespread occurrence of resultative verb compounds.

The other contrasting properties observed above can be accounted for in similar ways. With respect to the nominal domain, for example, we may assume that, in all languages, count nouns are derived from a structure with an individuating functional head (see Borer 2005). In English, the divider head is phonetically null and triggers movement, as in (28), while in Chinese we have an overt individuating head in the form of an overt classifier, which blocks movement:





In the same way, we may assume that a location-denoting DP is headed by a Localizer Phrase, whose head is filled by the null category PLACE (or SIDE, FRONT, etc.) that triggers movement in English, but by an overt localizer like *limian*, *pangbian*, *qian*, etc., in Chinese (Kayne 2005 *et seq*, Huang 2010).

In each of these cases, we see that head movement results in synthesis, whereas non-movement preserves lexical analyticity. The latter makes Chinese a ‘Davidsonian language par excellence’ in the sense that it fully spells out each component of a decomposed predicate as assumed in much work on the semantics of events.

4. Analyticity in functional syntax

There are many other properties of Chinese syntax that can now be seen as special parts of a bigger picture. In this section I claim that a number of such properties can be attributed to the analytic properties of clausal functional categories—in the region of T and C.

The first concerns *wh*-questions: in English *wh*-phrases move to Spec of CP, but in Chinese they stay in situ. Movement brings a *wh*-phrase to (the Spec of) a relevant interrogative C category, while non-movement keeps the two items apart. Thus the in-situ vs. movement contrast is simply another instance of the analytic-synthetic difference:

(30)
$$[\text{CP } \text{C}_{[+Q]} [\text{TP } \text{he bought what}]] \quad (\text{movement: synthetic})$$

(31)
$$[\text{CP } [\text{IP } \text{ta mai-le shenme}] \text{C}_{[+Q]}] \quad (\text{in situ: analytic})$$

 he bought what

Cheng (1991) argues plausibly that the in-situ strategy in Chinese is related to the existence of an overt question particle (such as *ne*) in the position of Q. While the null C in English is [+strong] and triggers auxiliary inversion (*What did you buy*), the (sometimes lexical) C in

Chinese is non-suffixal, thus [-strong] and does not trigger movement to C. As for phrasal movement of the *wh*-phrases, this is due to the [EPP] feature. A functional head F^0 is [+EPP] if it is of such nature as to require its Spec position to be filled by a certain XP in its domain. In English, C with [+EPP] requires its Spec to be filled by a *wh*-phrase, hence triggering overt *wh*-movement; in Chinese, the [-strong] C is [-EPP], hence keeping the *wh*-phrase in situ (or delaying the movement to LF, as in Huang 1982).

There is another way to relate the English-Chinese differences to the analytic-synthetic parameter, drawing upon an insight from Tsai (1994). Tsai shows that English *wh*-phrases are lexically complete with their quantificational forces. Thus just as *somewhat*, *somehow*, *somewhere*, *whatever*, *whoever*, *wherever*, etc., are unambiguous with their quantificational force because they each contain an existential or universal operator (*some*- and *-ever*), so are *who*, *what*, *where*, etc., unambiguous (with interrogative force) because, he proposes, these items contain an (invisible) interrogative operator each as part of their *lexical* make-up. Each of these items then is lexically a combination of a noun stem and a quantificational operator. On the other hand, it has been well known that Chinese *wh*-phrases are ‘indeterminate’ (a term first due to Yuki Kuroda) with respect to their quantificational forces: a *wh*-word like *shei* could be interpreted as an existential, universal or interrogative quantifier depending on the type of external operator that binds it. In particular, a *wh*-phrase is interrogative in Chinese only in the environment of a c-commanding question operator (or the particle *ne*), universal in the environment of *dou*, and existential in a *non-veridical* environment (see Li 1992, Lin 1998; cf. Giannakidou 2002). While an English interrogative phrase is a continuous (hence synthetic) *wh*-phrase by itself, a Chinese interrogative is a discontinuous (hence analytic) phrase of the form *OP* (or *ne*) . . . *wh*-phrase. An English interrogative word is formed in the lexicon, but a Chinese interrogative ‘word’ is not formed until syntax. This difference, in the derivational timing of a *wh*-word (lexicon vs. syntax), directly gives rise to a difference in the derivational timing of *wh*-movement (overt in syntax vs. covert in LF).⁹

A similar picture obtains with expressions like *who the hell*, *what the Dickens*, *why on earth*, etc., and their Chinese counterparts. Pesetsky (1987), who dubbed these ‘aggressively non-d-linked *wh*-phrases’, observes that (a) they must occur as a single continuous phrase, and (b) they must occur in Spec, CP (even though normal simplex *wh*-phrases may stay in situ in multiple *wh*-questions):

- | | | |
|------|-------------------------------|------------------------------------|
| (32) | What the hell are you doing? | Why on earth are you still here?! |
| (33) | *What are you doing the hell? | *Why are you still here on earth?! |
| (34) | *Who saw what the hell? | (cf. Who saw what?) |

The corresponding expressions in Chinese involve, unsurprisingly, a discontinuous (hence analytic) strategy, with the adverbial *daodi* occurring with an interrogative element in its c-command domain, as first observed by Kuo (1996).¹⁰

- (35) Zhangsan daodi yao shenme shihou cai lai?
 Zhangsan daodi want what time then come
 ‘When the hell will Zhangsan eventually come?’
- (36) Ni daodi mingtian qu-bu-qu?

you daodi tomorrow go-not-go

‘Do you want to go tomorrow or not?’ (Make up your mind, for God’s sake!)

Huang & Ochi (2004) offered a unifying analysis for *daodi* in Chinese, *wh-the-hell* in English, and corresponding *ittai* in Japanese. They proposed that questions involving these expressions involve a functional projection in the upper TP region (in the spirit of Cinque 1999) representing speaker attitude, called Attitude Phrase (AttP), which contains the attitudinal adverbial *daodi*, *the hell*, *on earth*, etc., c-commanding an interrogative phrase. In English, Att⁰ contains a formal feature that is [+strong] and overtly attracts a *wh*-phrase to it, forming a *wh-the-hell* constituent at the Spec, AttP. Subsequent movement triggered by the [+strong] feature of C moves the phrase to Spec, CP. On the other hand, in Chinese (and Japanese), the [-strong] nature of Att⁰ requires only an Agree relation, thus the *daodi* ... *wh*-phrase remains discontinuous—with the movement procrastinated to LF. Again, we can see this difference as another instance of the synthetic-analytic difference.

As for Pesetsky’s second observation, i.e., that *what the hell*, etc. may not be left in situ even in a multiple question (38), Huang & Ochi argued that this follows as a consequence that the *wh*-phrase has the status of an adjunct, having moved to AttP and assembled with *the hell*, *on earth*, etc. As already independently observed (Huang 1982), in English multiple questions, adjunct *wh*-phrases cannot stay in situ.¹¹

(37) *What did you buy why? (cf. Why did you buy what?)

(38) *Which car did you fix how? (cf. How did you fix which car?)

Several other examples of a similar synthetic-analytic contrast find themselves in the existence (or not) of negative quantifiers like *nobody*, the reciprocal NP *each other*, and what Safir & Stowell (1987) dub ‘binominal-*each*’ constructions. In English such expressions exist as single constituents, along with a discontinuous option:

(39) a. John did not see anybody.

b. John saw nobody.

(40) a. They each criticized the other(s).

b. They criticized each other.

(41) a. They each ate three apples.

b. They ate three apples each.

But in Chinese, only the discontinuous (analytic) forms are acceptable in the corresponding examples.

(42) a. Zhangsan mei you kanjian renhe ren.
Zhangsan not have seen any person
‘Zhangsan has not see anybody.’

b. *Zhangsan kanjian-le meiyou ren.
Zhangsan see-Perf no person

- (43) a. tamen ge piping-le duifang.
 they each criticized-Perf other
 ‘They each criticized the other(s).’
- b. *tamen piping-le bici.
 they criticized each-other
- (44) a. tamen ge chi-le san-ge pingguo.
 they each eat-Perf 3-Cl apple
 ‘They each ate three apples.’
- b. *tamen chi-le ge san-ge pingguo.
 they eat-Perf each three-Cl apple

It has been argued that, in some languages, negative quantifiers like *nobody* are syntactically derived from a combination of *not* + *anybody* under adjacency, when the two items are brought together by some syntactic operations. The most interesting case comes from Norwegian (and other Scandinavian languages), in the analysis of Christensen (1991), who observes that the expression *ingen bøker* ‘no books’ in Norwegian may occur after a finite verb in the main clause, but not in the embedded clause:

- (45) a. Arne kjøpte ingen bøker
 Arne bought no books
 ‘Arne bought no books.’
- b. *Jon beklager at Arne kjøpte ingen bøker.
 John regrets that Arne bought no books

Furthermore, in the presence of an auxiliary, *ingen bøker* cannot occur postverbally even in the main clause:

- (46) a. *Jon har kjøpt **ingen bøker**.
 Jon has bought no books
 ‘Jon has bought no books.’
- b. Jon har **ikke** kjøpt **noen bøker**.
 John has not bought any books
 ‘John has not bought any books.’

The ungrammatical examples can be corrected by using a discontinuous strategy of the form *ikke ... noen bøker* ‘not ... any books’ as in (47), or by placing *ingen bøker* before the verb as in (48):

- (47) Arne ikke kjøpte noen bøker.

Arne not bought any books
 ‘Arne did not buy any books.’

- (48) Jon har **ingen bøker** kjøpt.
 John has no books bought
 ‘Jon has no books bought.’

Christensen (1991) argues that this state of affairs follows if one assumes that all instances of grammatical *ingen bøker* ‘no books’ are derived from an underlying *ikke ... noen bøker* string by a local rule that contracts *ikke-neon* ‘not any’ to *ingen* ‘no’, when the two elements occur adjacent to each other. Thus the underlying structure for (45a) has the form of (47), where *ikke* ‘not’ is separated from *noen bøker* ‘any books’ by the verb *kjøpte*. Adjacency may be obtained for (47), however, if the main verb *kjøpte* vacates itself by moving to C (by V-T-C movement), thereby enabling the contraction rule to apply. After the subject *Arne* is moved the Spec, CP, the grammatical (45a) is obtained. The ‘*not-any* → *no*’ rule cannot apply if the clause is embedded as in (45b), however. In this case T-to-C is blocked by the complementizer *at* ‘that’, so the verb *kjøpte* continues to intervene between *ikke* and *noen*, blocking contraction. The ungrammaticality of (46a) also follows because, from its underlying structure in (46b), it is the auxiliary *har* that undergoes V-T-C but not the main verb, and so the adjacency requirement is not met. Finally, this situation can be remedied if the object *noen bøker* in (46b) is pre-posed before *kjøpt*, yielding *Jon har ikke noen bøker kjøpt* ‘John has not any books bought’, making contraction possible again, with the result shown in (48).

Given the above account, it is easy to see why Chinese does not allow a postverbal expression like *meiyou ren* ‘nobody’ as in (42b). Since Chinese does not have V-T or T-C movement, a verb cannot vacate itself from between *meiyou* ‘not’ and *renhe ren* ‘anyone’ in (42a).¹² Thus, a significant difference between Norwegian and Chinese with respect to postverbal negative quantifiers can be seen as a case of the synthetic-analytic parameter, formally attributable to a difference in the nature of a functional head (+ or – strong) that gives rise to V-second in one language but not the other.

As for English, the distribution of negative quantifiers is quite free. This can be due to the fact that additional movement operations (extended XP movements) are allowed (as in analysis of Kayne 1998), or one could assume that the type of synthesis (in LF) as permitted in Norwegian has been further reanalyzed in English, so that its products are now available directly from the English lexicon. In this particular aspect then, we can see a ranking of relative synthesis from English > Norwegian > Chinese on a continuum.

A similar view may apply to the reciprocal and binominal expressions. Assuming Kayne’s general approach, (40b) can be derived from something like (40a) by a series of movements: from *each criticized other* to *each other criticized* by pre-posing *other*, and to *criticized each other* by VP (remnant) movement, etc., eventually yielding (40b).¹³ The binominal construction can be derived in a minimally different fashion: *each ate three apples* → *three apples each ate* → *ate three apples each*. As for Chinese, given the non-triggering nature of *ge* ‘each’, these expressions are not available.

We have seen that a number of differences between English and Chinese may be traced to a parametric difference in the nature of clausal functional heads, T and C, in whether they trigger head movements and/or XP-movements. A highly analytic language is one whose T

and C are not strongly uninterpretable, and thus do not trigger movement. That Chinese does not move from V to T is clear from the following two facts. First, like English and unlike French, the main verb does not precede adverbs or negation.

- (49) Zhangsan changchang kan dianying.
 Zhangsan often watch movie
 ‘Zhangsan often goes to the movies.’
- (50) Zhangsan bu xihuan Lisi de piping.
 Zhangsan not like Lisi de criticism
 ‘Zhangsan does not like Lisi’s criticism.’

Second, while English moves an auxiliary to T (as in (51)), Chinese does not even allow auxiliaries to move:

- (51) a. John cannot come to visit you.
 b. John has not read about this news.
- (52) a. Zhangsan bu neng lai kan ni. (* ... neng bu ...)
 Zhangsan not can come see you
- b. Zhangsan meiyou niandao zhe-ze xinwen. (* ... you mei ...)
 Zhangsan not-have read this-CL news

The lack of V-to-T (and therefore also of T-to-C) movement thus basically keeps the lexical and functional heads in their base positions. This, plus the lack of XP movement to Spec, CP, leads to what might be termed ‘Kaynean word order par excellence’ for a typical Chinese sentence:

- (53) Chinese canonical word order
 Subject—Adjunct—Verb—Complement

That is, the surface word order basically corresponds to the relative height (in terms of asymmetric c-command) among the components, in reverse to their order of (external) Merge, as Kayne (1994) would have it. This result also gives rise to what Huang (1984, 1982) referred to as the Postverbal Structure Constraint (PSC), which provides that the verb may be followed by at most one constituent (object or complement) per clause, requiring all other elements to occur pre-verbally—a sort of ‘backward Verb-Second’ requirement, counting from the end.¹⁴

Thus, what seems to be a completely independent property of word order (Kaynean word order or the PSC in earlier work) can now be seen as a special case of high analyticity.

Before we conclude this section, it is worthwhile to point out that, although Chinese has no V-to-T nor T-to-C movement, it does allow V-to-V and V-to-v movement. V-to-V movement would be required given the widely assumed Larsonian analysis of dative, double-object and other constructions involving triadic predicates (Larson 1988):

- (54) Zhangsan [_{VP} song-le [_{VP} Lisi [_{V'} t_v liang-ben xiaoshuo]]]
 Zhangsan give-Perf Lisi two-CL novel
- 

Even with non-triadic predicates, V-movement out of VP is possible, as illustrated in the following cases (I shall assume this is V-to-v, since the requisite movement is not for lexical but for grammatical—e.g., Case-theoretic—reasons):

- (55) Zhangsan [_{VP} chi-le [_{VP} Lisi [_{V'} t_v yi-wan mian]]]
 Zhangsan eat-Perf Lisi one-bowl noodle
 ‘Zhangsan ate a bowl of noodles of Lisi.’
- (56) Zhangsan [_{VP} kai-le [_{VP} Lisi [_{V'} t_v yi-ge wanxiao]]]
 Zhangsan poke-Perf Lisi one-CL joke
 ‘Zhangsan made fun of Lisi once.’
- (57) Zhangsan [_{VP} tan-le [_{VP} [_{V'} [_{V'} liang-ci t_v gangqin]]]]
 Zhangsan play-Perf twice piano
 ‘Zhangsan played the piano twice.’

In (55)-(56) the verb moves above an applicative object (‘outer object’), and in (57) it moves above a low adjunct, an ‘incidentive’ adverb, which is underlyingly above the verbal head.¹⁵ In addition to deriving the correct order of constituents, one independent piece of evidence for movement comes from coordinate constructions like the following:

- (58) Zhangsan chi-le Lisi yi-wan mian, Wangwu liang-pan shuijiao.
 Zhangsan eat-Perf Lisi one-bowl noodle Wangwu two-dish dumpling
 ‘Zhangsan ate a bowl of noodles of Lisi, and two dishes of dumplings of Wangwu.’
- (59) Zhangsan tan-le liang-ci gangqin, san-ci jita.
 Zhangsan play-Perf twice piano thrice guitar
 ‘Zhangsan played the piano twice and the guitar three times.’

The familiar coordination test implies that *Lisi yi-wan mian* ‘Lisi a bowl of noodles’ and *liang-ci gangqin* ‘two-time piano’ are each a syntactic constituent, but such constituents yield no coherent meanings. The problem disappears, however, if verb-movement is postulated. For example, assume that *tan* ‘play’ undergoes across-the-board (ATB) movement out of two conjoined VPs:¹⁶

- (60) Zhangsan [_{VP} tan-le [_{VP} liang-ci t_v gangqin], [san-ci t_v jita]].
 Zhangsan played twice piano thrice guitar
- 

Examples (57) and (59)-(60) show that V may move across a low incidentive adjunct, but recall from (49)-(50) that it cannot cross a higher adjunct like ‘often’ or negation, thus movement cannot proceed as high as T.

In short, we conclude that Chinese has V-to-V and V-to-v, but no v-to-T or T-to-C movement.¹⁷ In general, the distance of movement along the clausal spine corresponds to the extent of grammaticalization of a given functional category—the more grammaticalized, the higher the movement, and the higher degree of synthesis. (See Roberts and Roussou 2003 for related insightful discussion.)

Now we are in a position to consider yet another parametric difference between English and Chinese, concerning the distribution of gapping. It was observed early on by Sanders & Tai (1972) that, different from English, Chinese does not allow (canonical) gapping:

(61) John eats rice, and Bill spaghetti.

(62) *Zhangsan chi fan, Lisi mian.
Zhangsan eat rice Lisi noodles

The question is why English and Chinese should differ precisely this way and not, say, the other way around.¹⁸ This question was never seriously addressed for a long time. Tang (2001) argues for an interesting answer on the basis of Johnson's (1994) theory of gapping (cf. also Johnson 2009), according to which the verb moves across-the-board out of a conjoined vP, into a functional head μ in the IP region (between T and v):

(63) [TP [_μP eats [_vP [_vP John t_v rice], and [_vP Bill t_v spaghetti]]



The derivation yields (61) after *John* moves to Spec, TP. Note the striking similarity between the ATB movement structure for gapping as in (63) and the ATB movement structure for (58)-(59) as depicted in (60). The crucial difference is that the ATB movement in (58)-(60) is V-to-v out of a conjoined VP, whereas the ATB movement in (61) and (63) is v-to- μ out of a conjoined vP. While (63) is a structure for 'canonical gapping' in the TP domain, (61) is a structure for 'short gapping' in the vP domain. The question is now why 'short gapping' is possible in both Chinese and English (see note 16), but 'canonical gapping' is possible only in English. The answer is straightforward, according to Tang (2001): because Chinese has only V-to-v movement, while English has both V-to-v and (limited) v-to-I movement.¹⁹

Summarizing this section, we have seen that a number of syntactic properties form a cluster that distinguishes Chinese from English (and other languages):

- (64)
- a. *wh*-in-situ
 - b. discontinuous *wh-the-hell* construction
 - c. absence of negative quantifiers, reciprocals, and bi-nominal *each*
 - d. Kaynean word order par excellence (or 'V2 counting backwards')
 - e. absence of canonical gapping

Some of these properties have heretofore been observed or treated as independent properties, but given the analyses noted above, their clustering is immediately explained, with each of them reflecting the same analytic nature of functional heads on the clausal spine in Chinese.

Given the properties we have reviewed, as summarized for lexical categories in (20) and (24) and for clausal functional categories in (64), and given the Uriagereka-Lasnik metaphor of a virus, Modern Chinese might as well be termed a ‘healthy’ language, as compared to the less analytic ones.

5. Analyticity in argument structure

Languages may differ on how conceptual structures are represented and formed morphologically and syntactically, and how functional categories affect or constrain grammatical operations. They may also differ in how information in the lexicon interacts with syntax—in how argument structure is projected to syntax or manipulated by grammar. Here again, we see a number of parametric differences that may be profitably seen as reflecting the analytic/synthetic divide.

One difference bears some resemblance to the distribution of *nobody*, *each other*, etc., as discussed above: in each case, an (adverbial) *not* or *each* at a clausal level may (or may not) serve an adjectival role in a nominal structure. The following pair in English is another such case:

- (65) a. Jennifer types fast, Dorothy drives fast, etc.
b. Jennifer is a fast typist, Dorothy is a fast driver, etc.

Lin & Liu (2005) observes that a sentence corresponding to (65b) in Chinese must express ‘fast’ as an adverb, but not as an adjective:

- (66) Zhangsan shi yi-ge (da zi) da-de hen kuai de daziyuan.
Zhangsan be one-Cl (type) type very fast De typist
‘Zhangsan is a typist who types fast.’

- (67) *Zhangsan shi yi-ge hen kuai de daziyuan.
Zhangsan be one-Cl very fast De typist

Similarly, whereas (68) in English may refer to a person who is beautiful but may not sing too well or a person with average appearance who sings beautifully, a corresponding sentence in Chinese is not ambiguous.

- (68) Jennifer is a beautiful singer.

For the two readings, *piaoliang* ‘beautiful’ must occur in construction with a noun or with a verb, respectively:

- (69) Amei shi yi-ge hen piaoliang de geshou.
Amei be one-Cl very beautiful De singer
‘Amei is a singer who is beautiful.’

- (70) Amei shi yi-ge chang-de hen piaoliang de geshou.
Amei be one-Cl sing very beautifully De singer

‘Amei is a singer who sings beautifully.’

These English examples illustrate sub-lexical modification into parts of a noun. ‘Fast’ modifies the *drive* part of *driver*, and *beautiful* modifies the *sing* part of *singer*, to the exclusion of the head suffix *-er*. Larson (1998) proposes that ambiguities arise in English because certain nouns may contain a Davidsonian event place in their argument structure. Thus *singer* is taken to denote an event-individual pair $\langle e, x \rangle$ such that Singing (e) and Agent (e, x), and the ambiguity arises because *beautiful* may be predicated of e or of x .

Another way to state the English-Chinese contrast is to relate it to Chierchia’s (1998) Nominal Mapping Hypothesis, according to which nouns in Chinese denote kinds and are of type $\langle e \rangle$, whereas English nouns denote predicates of type $\langle e, t \rangle$. The elementary, static, semantic type $\langle e \rangle$ can be modified by an adjective that describes the quality of an individual, but the dynamic type $\langle e, t \rangle$ could have a component open to modification by the event modifier. If so, it is no surprise that a language that requires a numeral classifier is also a language that does not allow sub-lexical modification.

The phenomenon illustrated is part of a larger picture and rich topic that goes well beyond the scope of our concern, but the relevant point here is that Chinese contrasts with English in the way described, not the other way around. This difference is in line with what we have seen elsewhere with respect to the relative complexity of lexical items.²⁰

As we saw in Section 2, the lack of simplex accomplishment verbs is compensated for by the richness of resultative compounds and phrasal resultative constructions. English also abounds in phrasal resultatives, though its resultative compounds are somewhat limited (to verb-particle constructions like *turn on*, *pick up*, etc.). One well known property of English resultatives is the Direct Object Requirement (DOR), originally due to Simpson (1983) and made famous by Sybesma (1992, 1998) and Levin & Rappaport (1995), which provides that the result clause of such a construction must be predicated on an object in the main clause:

- (71) a. John_i hammered the metal flat_i.
b. *John_i hammered the metal tired_i.

Apparent predication on the subject is possible only with a passive, inchoative or unaccusative sentence, where the subject binds an object trace:

- (72) a. The metal_i was hammered t_i flat_i.
b. The garage door_i rumbles t_i open_i.
c. The river_i froze t_i solid_i.

The DOR rules out resultatives with an unergative verb like *cry* or *run*, and explains the need for a ‘dummy reflexive’ in such cases:

- (73) a. *John cried silly.
b. *Bill ran exhausted.
- (74) a. John cried himself silly.
b. Bill ran himself exhausted.

A (by now) well-known problem from Chinese is that unergative resultatives are perfectly fine without a dummy reflexive, in apparent violation of the DOR:

- (75) a. Zhangsan ku-de hen lei.
Zhangsan cry-De very tired
'Zhangsan cried [himself] exhausted.'
- b. Lisi pao-de manshen dahan.
Lisi ran-De full-body big-sweat
'Lisi ran [himself] sweating all over the body.'

Another peculiar fact is that a resultative with an unergative or transitive main verb may be causativized:

- (76) a. zhe-jian shi ku-de Zhangsan yanjing dou hong le.
this-CL thing cry-De Zhangsan eyes all read Perf/FP
'This thing caused Zhangsan to cry [himself] red-eyed.'
(Lit.: *This thing cried Zhangsan red-eyed.)
- b. baozhi kan-de Lisi touhunyanhua.
newspaper read-De Lisi dizzy
'The newspaper caused Lisi to read [himself] dizzy.'
(Lit.: *The newspaper read Lisi dizzy.)

But this is totally impossible in English, as the literal translations above show. Only unaccusatives or inchoatives can be causativized:

- (77) a. The door rumbled open.
b. John rumbled the door open.
- (78) a. John got angry.
b. He got John angry.

So why does Chinese allow unergative resultatives, and the causativization of unergative resultatives, but English allows neither?

Huang (2006a) proposed that these questions have a single answer: the examples (75) are actually *not* unergative, but unaccusative/inchoative resultatives. As such they do obey the DOR as other unaccusatives do in (72b-c). And as unaccusatives, they can be causativized as in (76). In support of this proposal, crucial reference is made to the verbal clitic *-de*, which literally means 'get', which (just as English *get*) may alternate between 'become' and 'cause' meanings, as just illustrated in (78) above. That is, in both (75a-b), *-de* heads the main verb with its inchoative meaning, but is itself phonologically supported by an unergative verb expressing the manner or source of the change: Zhangsan *got* (= *de*) exhausted from crying in (75a), and got profusely sweating from running in (75b). And when a causative component is added on top of the inchoative component, movement of verb-*de* will cross the experiencer *Zhangsan*, producing the causatives in (76a-b). So,

Chinese does not violate the DOR with an unergative resultative, nor can it causativize an unergative resultative.

The question boils down to why English cannot be analyzed in the same way. The answer again turns to the synthetic-analytic difference between the two languages. In English, what corresponds to *de* in Chinese would be a null light verb, BECOME or CAUSE which, due to its [+strong] nature, attracts a verb that agrees with it in thematic properties. Thus the lower component may only host an unaccusative or inchoative verb, and only such a verb would be the input for causativization. The movement may occur in lexical structure in the sense of Hale & Keyser (1993), or overt syntactic movement triggered by strong features. In Chinese, on the other hand, it is only the phonological defectiveness of *-de* that triggers movement. Movement of this type may be delayed to the PF component, again a type of derivational timing that characterizes relative analyticity, as we have seen above and elsewhere.²¹

A very similar type of apparent unaccusative use of unergatives can be observed below:

- (79) a. xiao niao gei fei le.
 small bird give fly Perf
 ‘The little bird flew away.’
 b. xiao gou gei pao le.
 small dog give run Perf
 ‘The puppy ran away.’

Shen & Sybesma (2010) studied a type of passive-like construction involving *gei* ‘give’ taking an intransitive VP as its complement (the so-called ‘give-passive’) and observed that the complement VP must be unaccusative, not unergative or transitive. In the examples above, however, the verbs ‘fly’ and ‘run’ are unergative in their normal meanings, but they are allowed. The key to the problem is that these verbs are translated as ‘fly away’ and ‘run away’, as shown. That is, in these examples the verbs actually express the manner of a covert unaccusative verb as its head (i.e., a silent DIAO ‘off’ or ZOU ‘away’, as in *fei-diao*, *pao-zou*). Again this state of affairs comes about in Chinese because the silent head accounts for its syntactic and semantic status, requiring phonetic support only in PF.

In both the resultatives and the so-called ‘give-passives’, the point is that the existence of some apparent counter-examples to the DOR or the unaccusative requirement found in Chinese does not warrant the conclusion that the DOR or even the Unaccusative Hypothesis does not apply in Chinese. What we have seen is that the violations are only apparent, and it is the analytic nature of the non-triggering heads that give rise to the appearance of violations.

This way of thinking is in line with the theory of light verb syntax proposed in Lin (2001, see also Lin 2013) in the account of apparent ‘unselectiveness’ of the subject or object in Chinese, as illustrated below:

- (80) kai che; kai gaosu gonglu; kai zuobian; kai wanshang; kai haowan.
 drive car drive super highway drive left-side drive night drive fun
 ‘To drive a car; drive [on] the freeway; drive [on] the left side; drive [at] night; drive [for] fun.’

- (81) chi fan; chi fanguan; chi kuaizi; qie rou; qie zhe-ba dao; etc.
 eat rice eat restaurant eat chopsticks cut meat cut this-CL knife
 ‘Eat rice; eat [at the] restaurant; eat [with] chopsticks; cut the meat; cut [with] this knife; etc.’

Note that in each case above, a transitive verb may, instead of a selected theme argument, take one of a range of non-arguments as its object, resulting in apparent syntax-semantics mismatches (as if someone eats a restaurant, cuts a knife, etc.). The ‘object’ would otherwise normally be introduced with a prepositional phrase, as given in the English translation. English does not enjoy this type of freedom from the normal requirements of selection. Lin’s proposal is that the difference arises from a difference in the relative analyticity of argument structure. In particular, a predicate like *put* in English is lexically associated with an argument structure like <Agent, Theme, Location> (perhaps having acquired this ‘virus’ as a result of operations of lexical syntax in the sense of Hale & Keyser 1993). The formal features associated with the predicate make it necessary for it to move and be placed in a proper fixed location in the syntactic tree, given Baker’s (1988) Uniformity of Theta-Assignment Hypothesis (UTAH). In Chinese, however, a predicate enters the computation without a full argument structure, thus exhibiting considerable freedom in its syntactic positioning, sometimes moving into the position of a silent light verb that takes an adjunct as its object:

- (82) Zhangsan YONG zhe-ba dao qie
 Zhangsan use this-CL knife cut
- 

In order for Lin’s theory to hold, one difference in the nature of the light verb must also play a role. In particular, while in English a covert light verb must contain formal features that trigger movement of a root verb under feature-agreement, in Chinese a covert light verb must not contain [+strong] features that trigger agreement-based movement. As a result, movement occurs in PF—importantly—for pure reasons of phonology, with no semantic consequences.

We have seen in this section, then, that Chinese exhibits a high degree of simplicity in argument structure, both within nouns and verbs, accounting for a number of differential properties with respect to sub-lexical adjectival modification, apparent unexpected behaviors of the resultative construction, apparent unaccusative use of unergative verbs, and apparent freedom from selection requirements.

More generally, we have seen that Modern Mandarin displays high analyticity at almost every level of grammar: lexical structure, functional structure, and argument structure, leading (among other things) to its explicit Davidsonian syntax and canonical Kaynean word orders on the one hand, and a range of apparent syntax-semantics mismatches on the other.²² Some of the properties we have reviewed may have been observed before, but are often presented as independent, unrelated phenomena, but given the analyses proposed here they can all be seen as special cases of a larger picture, and their clustering is thereby explained. This full range of properties distinguishes Modern Mandarin not only from English and

other non-Sinitic languages, putting it near one extreme of the analytic-synthetic continuum. In fact, this range of properties also distinguishes Modern Mandarin from Old Chinese quite sharply, as we shall now see below.

6. Old Chinese typological properties

In contrast to Modern Chinese, Old Chinese (Archaic Chinese, 500 BC to 200 AD) exhibits a full array of properties that make it a relatively synthetic language. Indeed, it will be seen that Old Chinese behaved more like Modern English, in the relevant typological properties we have reviewed.

6.1. Lexical categories

At the lexical level, the following properties put OC in sharp contrast with Modern Chinese.

- (83) Old Chinese (OC) lexical categories
- a. denominal verbs: no need for light verbs
 - b. true incorporation: no pseudo incorporation
 - c. simplex causatives: no compounds or phrasal accomplishments
 - d. countable nouns: no need for numeral classifiers
 - e. nouns qua locations: no need for localizers

Many words in OC exhibit polysemy between a nominal and verbal meaning, a case of denominalization on a par with English *telephone*, but not Mandarin *da dianhua* (recall also (4) above).

- (84)
- a. 魚 *yu* ‘fish, to fish’
 - b. 食 *shi* ‘food, to eat’
 - c. 衣 *yi* ‘clothing, to get clothed’
 - d. 飯 *fan* ‘rice, to have rice’
 - e. 歌 *ge* ‘song, to sing’
 - f. 王 *wang* ‘king, to be a king’

In each case the verbal usage may be derived via noun-incorporation into a light verb with the elementary meaning of DO, thus making pseudo-incorporation unnecessary—no examples like *bu yu* ‘catch fish’ or *chi fan* ‘eat rice’ found in Modern Mandarin.

OC also abounds in examples of causativization, with simplex verbs exhibiting alternations between causative and non-causative readings:

- (85)
- a. 破 *po* ‘break (both inchoative and causative uses)’
 - b. 小 *xiao* ‘small, belittle (= make small)’²³
 - c. 受/授 *shou* ‘receive, bestow (=cause to receive)’
 - d. 假 *jia* ‘borrow, lend (=cause to borrow)’

These alternations indicate the existence of verb movement into a light verb CAUSE. Some causative verbs in OC start out as nouns, which first denominalize and then causativize, much as English *food* > *feed (on)* > *feed (someone)*. Some examples from the Classical texts:

- (86) 君子問人之寒，則衣之；問人之饑，則食之；稱人之美，則爵之。《禮記·表記》
 junzi wen ren-zhi han, ze yi zhi; wen ren-zhi ji, ze shi
 gentleman ask person's cold, then clothe him; ask person's hunger, then feed
 zhi; cheng ren-zhi mei, ze jue zhi. (from *Liji, Biaoji*)
 him; praise person's virtues, then nobility him

‘When a gentleman wonders about one’s being cold, he will clothe him; when he wonders about one’s hunger, he will feed him; and as he praises one’s virtues, he will make him a member of the noble class.’

- (87) 諸母漂，有一母見信飢，飯信。《史記：淮陰侯列傳》
 zhu mu piao you yi mu jian Xin ji, fan Xin. (from *Shiji*)
 various women wash, have one woman see Xin hungry, rice Xin

‘Various women were washing clothes [by the river]. One woman saw Xin being hungry, so she riced Xin [=fed him with rice].’

Mei (1989, 2008a, 2008b & 2012) has postulated a denominative prefix and a causative prefix in OC (and earlier), both reconstructed in the form of **s-*. In the terms of the Probe-Goal system, we can take the **s-* as an affixal light verb with the elementary meaning of DO or CAUSE (or CONSIDER, see note 22). Due to their highly affixal (hence [+strong]) nature, **s-DO* triggers denominalization by noun-incorporation, and **s-CAUSE* triggers causativization by verb-movement:

- (88)
-
- shi ‘food, feed, feed’
 yi ‘clothing, get dressed, clothe someone’
 fan ‘rice, have rice, feed someone with rice’

Note that the availability of denominalized verbs in OC means the general absence of overt light verb constructions as widely used in the Modern Chinese—this is property (83a) as listed above. The general absence of ‘phrasal verbs’ involving pseudo noun-incorporation also follows, given that simplex verbs may be formed by genuine noun-incorporation—property (83b). And, the availability of making a lexical causative verb by incorporating a non-causative with the causative affix **s-*, also makes it unnecessary to resort to complex expressions of accomplishment like resultative compounds or phrases—property (45c). Indeed, it is pointed out in Mei (1991 and references) that the resultative compounds and phrases that are so productive in Modern Mandarin were not fully established until late Middle Chinese.²⁴ As a result, as far as the verbal domain is concerned, OC was robustly synthetic.²⁵

The same is true of the nominal domain. It has been pointed out (Peyraube 1996, 2003) that classifiers were not required for numerated count nouns in OC, nor any localizers for nouns denoting locations. These can be seen from the two familiar passages from *Lunyu* (Confucian Analects):

- (89) 三人行，必有我師焉。
 san ren xing, bi you wo shi yan.
 three person walk must have my teacher there
 ‘When three people get together, there must be a teacher of mine there.’
- (90) 八佾舞於庭。是可忍也，孰不可忍也？
 Bayi wu yu ting, shi ke ren ye, shu bu ke ren ye
 8x8 dance at hall this can tolerate Prt, what not kan tolerate Prt
 ‘To have the 8x8 court dance performed in [his own] hall! If this can be tolerated, what [else] cannot be tolerated?’

These examples may be taken to show that, like their verbal counterparts, the nouns in OC were also incorporated into their covert ‘light noun’ heads—an abstract Div⁰ head above the root NP, or the light noun PLACE or Loc head. (On the latter, see Huang 2010 for more details.) As far as the lexical categories are concerned, then, OC was consistently synthetic.

6.2. Clauses

At the clausal level, OC exhibits several word order differences from Modern Chinese (MnC). The best known is that *wh*-objects are fronted to a pre-verbal position after the subject:

- (91) 沛公安在？《史記·項羽本紀》
 Peigong an zai? (*Shiji.Xiangyu*)
 Peigong where be-at
 ‘Where is Lord Pei?’

- (92) 吾谁欺，欺天乎？《论语·子罕》
 wu shei qi, qi tian hu? (*Lunyu.Zihan*)
 I who deceive, deceive heaven Q
 ‘Who do I receive; do I deceive Heaven?’

When an object is relativized, the relative pronoun *suo* appears in the preverbal position as well:

- (93) 魚我所欲也；熊掌亦我所欲也。《孟子》
 yu wo suo yu ye; xiongzhang yi wo suo yu ye. (*Mencius*)
 fish I what like FP, bear-palm also I what want FP
 ‘Fish is what I desire; a bear’s palm is also what I desire.’

Certain constituents get pre-posed when they bear the focus, for example when they occur with *wei* ‘be’ or ‘only’:

- (94) 率師以來，唯敵是求。《左傳·宣公十二年》
 shuai shi yilai, wei di shi qiu (*Zuozhuan.Xuan 12*)
 lead troop since only enemy Dem seek
 ‘Since leading the troops, no one but the enemies [have I been] running after.’

Or when they serve as contrastive topics, as pointed out by Aldridge (2012):

- (95) 楚國方城以為城，漢水以為池。《左傳·僖公四年》
 Chu guo Fangcheng yi wei cheng, Han Shui yi wei chi. (*Zuozhuan, Xi 4*)
 Chu state Fangcheng use be wall Han River use be moat
 ‘The Chu used Mt. Fangcheng as their castle wall and the River Han as their moat.’

Pronominal objects are cliticized before the verb in the domain of negation:

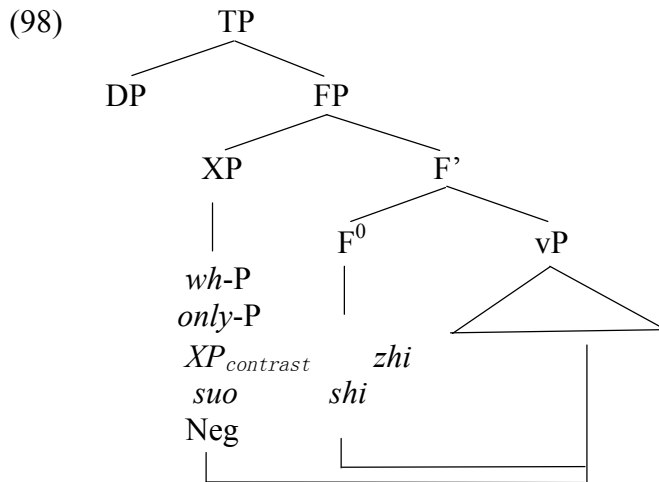
- (96) 昔君之惠也，寡人未之敢忘。《國語·晉語》
 xi jun zhi hui ye, guaren wei zhi gan wang
 past prince's favor FP, I not it dare forget (*Guoyu.Jinyu*)
 ‘The favor of the prince in the past, I dare not forget it.’

Sometimes pre-posed objects trigger ‘clitic doubling’, as already shown in (94) above with the demonstrative *shi*, and in (97) below with *zhi*:

- (97) 宋何罪之有？《墨子·公輸》
 Song he zui zhi you (*Mozi.Gongshu*)
 Song what sin/crime it have
 ‘What sin/crime does Song have?’

These word order properties indicate that the clausal structure of OC includes an active functional category that hosts the relevant preverbal materials. In particular, there exists a functional category FP whose head F^0 possesses the relevant features that trigger movement.

The [+EPP] feature triggers movement of an operator (a *wh*-phrase, a focused *only*-phrase, or the relative pronoun *suo*) to the Spec of FP, and the [+strong] affixal feature makes F⁰ a comfortable home for a cliticized pronoun.²⁶



There is another well-known difference in word order between OC and MnC with respect to the occurrence of post-verbal clausal adjuncts. Examples like the following are typical:

- (99) 萬乘之國，被圍於趙。《史記·魯仲連》
 wan sheng zhi guo, bei wei yu Zhao. (Shiji.Luzhonglian)
 10K carriage Gen nation, get surround by/at Zhao.
 ‘A nation of 10 thousand carriages got surrounded by/in Zhao.’

In the following clips from *Mencius*, the adjunct phrase *yi yang* ‘with a sheep’ has the choice of preceding or following the VP. According to some, the choice is not entirely free, but motivated by considerations of focus (cf. Lu 1982, Liu 1958):

- (100) a. 何可廢也？以羊易之！《孟子·梁惠王》
 he ke fei ye yi yang yi zhi (Mengzi.Lianghuiwang)
 how can abolish Prt with sheep replace it
 ‘How can we abolish [the sacrifice]? Replace it with a sheep!’
- b. 我非愛其財而易之以羊也。《孟子·梁惠王》
 wo fei ai qi cai er yi zhi yi yang ye.
 I not love its wealth and replace it with sheep Prt
 ‘It’s not because I love [to save] the wealth that I replaced it with a sheep.’

Although traditional descriptions generally treat the positional alternation in terms of adjunct preposing or postposing, Huang (2006b) suggested a different analysis in the spirit of Kayne (1994), assuming that post-verbal adjuncts arise from the fronting of VPs. This allows us to assimilate the structure of sentences with post-verbal adjuncts to a structure akin to (98), and would have the virtue of explaining the clustering of several word-order

properties of OC: the same language that allows post-verbal adjuncts by VP fronting also allows several cases of DP fronting, *and* the joint disappearance of these processes in Modern Chinese.²⁷ Aldridge (2013) adopts the proposed existence of a VP-fronting process in OC for the alternation shown in (100a-b)—as well as its loss in MnC—but she argues (a) that the process does not apply to produce true postverbal adjuncts as in (99), and (b) that the structure of (100b) does not involve a postverbal adjunct PP, but an applicative construction. In particular, *yi yang* in (100), translated above as ‘with a sheep’ is in fact not a PP, but involves a (semi-lexical) applicative verb *yi* (more appropriately translated as ‘use’) merged above the VP complement, which (optionally) moves. In her analysis, (100b) has the following relevant structure:²⁸

- (101) ... [[_{VP} *yi* *zhi*]_j [_V *yi*_i [*yang* [_{APPL} *t*_i [_{VP} *t*_j]]]]] ...
 replace it ↑ use sheep

Aldridge also argues, with Djamouri et al (2013), that postverbal adjuncts like the *yu* PP in (99) should be base-generated with a verb that moves higher up across the object.²⁹ Regardless of the details of the correct analysis, we see that OC may be characterized as having an appropriate functional element that triggers some EPP movement, or head-movement but that is not available in MnC.

Still another difference that distinguishes OC from MnC, first brought to light by Wu (2002), concerns the existence of canonical gapping. We saw above, in connection with (61)-(64), that MnC does not allow canonical gapping because it has only V-to-V and V-to-v movement, but no v-to-I or I-to-C movement. Interestingly, Wu (2002) shows that canonical gapping is allowed in OC (see also K. Mei 2003):

- (102) 為客治飯而自 Ø 藜藿。《淮南子·說林》
 wei ke zhi fan er zi — lihuo (Huainanzi.Shuolin)
 for guest cook rice and self grass
 ‘For guests cook rice, but for onself [cook] grass.’

He (2008) provides other examples arguing plausibly that, in OC, the verb moves out of vP into the IP region. This is not surprising given other established cases of movement into the Focus Phrase. Note that, if correct, this provides fascinating evidence for the Johnson-Tang analysis of gapping, and strengthens our point that an otherwise unrelated difference in the distribution of gapping is reducible to a case of micro-variation in relative analyticity.

6.3. The macro-history of Chinese syntax

Summarizing, Old Chinese and Modern Chinese (MnC) differ systematically over a range of constructions on the analytic-synthetic continuum, at both the level of lexical categories and the level of clausal functional categories, and in these respects, OC behaves more like English than it does MnC. With respect to the lexical categories, MnC exhibits properties of a “Davidsonian language par excellence,” while OC exhibits considerable polysemy through derivational synthesis. And at the clausal level, whereas a canonical Kaynean word order

typifies the internal constituents of the clause in MnC, considerable departure from the canonical order occurs in OC. We also see that the difference in the degree of analyticity can be characterized in each case within the Probe-Goal system on the basis of the nature of a probing head: a head with [+EPP] or a [+strong] affixal feature leads to movement and synthesis, while [-EPP] and a [-strong] head preserves analyticity by leaving elements in situ. While each case of the variation may be described in terms of a micro-parameter associated with a particular probing head, the clustering of parametric values across the board gives rise to the picture of a macro-parameter, the analytic-synthetic macro-parameter.

These differences reflect a macro-parametric *change* in the history of Chinese syntax, as has been pointed out in other recent works (K. Mei 2003, Wei 2003, Feng 2005, Huang 2006b, Xu 2006 and Hu 2005, 2008). More specifically: Old Chinese (dating from 500 BC to 200 AD) was fairly synthetic as described, but the language underwent a gradual change from the late Han toward analyticity, peaking around the Tang-Song dynasties (roughly from 200 to 900 AD), after which a new cycle of development has developed towards mild synthesis in varying degrees in various dialects, resulting in the major dialect groups of Modern Chinese.³⁰ For a more detailed treatment of the history, see Feng ().

Thus both synchronic variation (such as between Chinese and English) and diachronic change (such as between Old and a later stage of Chinese) may be characterized in parametric terms. They are often two sides of the same coin, especially among dialects and related languages of the same family. In particular, while synchronic variation results from variation in parameter setting (defined in terms of [interpretable], [strong], [EPP], etc.), diachronic change results from parametric change or resetting (i.e., reanalysis in the terms of grammaticalization research) that gives rise to (often multiple) new consequences. (See Roberts & Roussou 2003, Roberts 2007 and references therein for important relevant discussion.)

In the next section, we turn to some parametric variation among Chinese dialects. We shall see that some of the cross dialectal differences can again be seen as differences on the analytic-synthetic continuum, again describable in terms of the presence or absence of triggering heads in the vocabulary of the Probe-Goal checking system.

7. Parametric variation among Chinese dialects

I shall highlight three micro-parametric differences among three varieties of Modern Chinese: Mandarin, Cantonese and Taiwanese Southern Min (TSM).

7.1. Bare classifier phrases

A cross-dialectal variation that has attracted considerable recent attention concerns the distribution of a ‘bare classifier phrase’, a numeral-classifier phrase where the numeral ‘one’ is missing. In Mandarin, an unstressed *yi* ‘one’ may drop, giving rise to a ‘bare classifier phrase’ (BCP) like *ben shu* ‘Cl book’ with the meaning of *yi ben shu* ‘a book’, etc.:

- (103) *wo xiang mai [e] ben shu song-gei ta.*
 I want buy Cl book give-to him
 ‘I would like to buy a book to give to him.’

- (104) ta ba [e] ge hao pengyou gei dezui le.
 ta BA CL good friend give offend Perf/FP.
 ‘He got a good friend offended.’

In Mandarin, a BCP is allowed only in the environment of a governing verb or preposition (as above) but prohibited from the subject position:

- (105) *[e] ben shu bei tou le.
 CL book get steal Perf/FP
 ‘Intended: A book got stolen.’

- (106) *[e] ge hao pengyou zou le.
 CL good friend left Perf/FP
 ‘Intended: A good friend left.’

Cantonese, by contrast, allows a BCP in both subject and object positions, as observed in Cheng & Sybesma (1998:511).³¹

- (107) Ngo soeng maai bun syu (lei taai).
 I want buy CL book come read
 ‘I want to buy a book (to read).’

- (108) a. Zek gau zungji sek yuk.
 CL dog like eat meat
 ‘The dog likes to eat meat.’
 b. Ngo zungji tong zek gau waan.
 I like with CL dog play
 ‘I like to play with a/the dog.’

TSM presents a still different picture: it does not allow any BCP at all.

- (109) a. *goa xiuNbe boe *(chit) pun chheh lai koaN.
 I want buy (one) CL book come read
 ‘I would like to buy a book to read.’
 b. *i ka *(chit) pun chheh pangkiN khi a.
 he BA one CL book lose away FP
 ‘He lost a book.’
 c. *(chit) chia kao-a chao-chukhi a.
 one CL dog run-out-away FP
 ‘A dog ran away.’

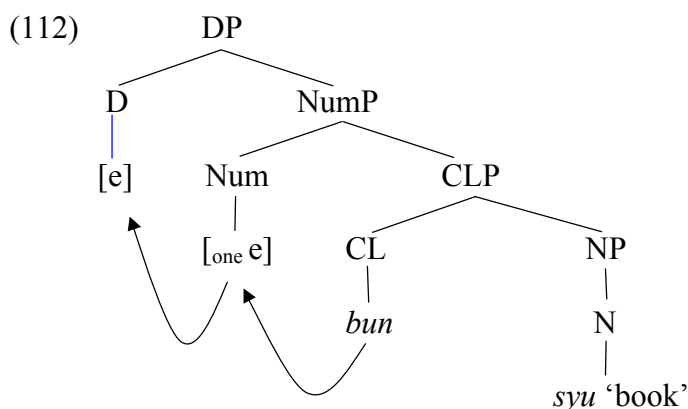
These differences are summarized below:

- (110) The distribution of a BCP in Chinese dialects
- a. Mandarin: *(subject) V/P ^{ok}(object)
 - b. Cantonese: ^{ok}(subject) V/P ^{ok}(object)
 - c. TSM: *(subject) V/P *(object)

How do we understand this pattern of distribution from a parametric point of view? I suggest that this reflects a ranking of relative analyticity among the three dialects: Cantonese > Mandarin > TSM, with Cantonese having progressed furthestmost in acquiring some degree of synthesis, while TSM has remained most analytic.³² First consider the difference between Cantonese and Mandarin. Building on Li (1998), assume that the BCP arises from the deletion of unstressed *yi* ‘one’, which results in an empty category [_{one} e] subject to the head-government requirement of the Empty Category Principle (ECP). Thus (103)-(104) are well-formed with the [e] governed by a verb or preposition, but (105)-(106) are ill-formed because the [e] is not properly governed. This explains the subject-object asymmetry as observed.³³ As for the Cantonese pattern, we assume following Simpson (2005) that here, the empty numeral position [e] is filled by the classifier that raises into it on its way to D⁰. Once the empty numeral and D positions are filled, the head-government requirement becomes irrelevant, and a BCP may occur in both subject and object positions. The Cantonese-Mandarin contrast thus boils down to one in the possibility of Cl-Num-D movement. We propose that this situation comes about because of a difference in the nature of the empty numeral *one*, as follows:

- (111) The null numeral ‘one’ micro-parameter:
- a. In Mandarin, [_{one} e] is [-strong], triggering Agree with Cl.
 - b. In Cantonese, [_{one} e] is [+strong], triggering Move of Cl.
 - c. In TSM, [_{Num} one] is lexical and hence [-strong].

Since Cl does not move to [_{one} e] in Mandarin, a subject-object asymmetry is observed, given the head-government requirement of the ECP.³⁴ In Cantonese, movement of Cl not only fills the [_{one} e] position but also opens up the possibility of further moving up to fill an otherwise empty D, as shown below:



Following Li (1999), Simpson (2005) and also Longobardi (1994), we assume that a DP receives a definite interpretation if D^0 is lexically filled with a Cl. This explains why Cantonese allows a BCP with definite reference to occur in both subject and object positions.³⁵

As for TSM, the non-affixal [_{Num} one] is also [-strong] and triggers only Agree with Cl, but exhibits no subject-object asymmetry since it is not an empty category. This establishes the TSM > Mandarin > Cantonese order in a hierarchy of relative analyticity.

In this respect, then, the difference between Mandarin and Cantonese with respect to Cl-to-Num raising is parallel to the well known difference between English and French with respect to V-to-I raising (Emonds 1978, Pollock 1989):

- (113) a. John often kisses Mary.
 b. *John kisses often Mary.
- (114) a. *Jean souvent embrasse Marie.
 Jean often kisses Marie
 b. Jean embrasse souvent Marie.
 Jean kisses often Marie

In the treatment of Chomsky (1995, 1999), French T^0 is [+strong] and triggers overt V-to-I movement over an adverb like ‘often’, whereas the [-strong] T^0 in English triggers Agree but no overt Move. Movement of V-to-I is delayed until LF, where it applies covertly. In the same manner, we can say that Cl-to-Num (and to D) movement occurs overtly in Cantonese, but covertly in Mandarin.

Lasnik (1995) proposes an alternative way to derive the French-English difference: while French has overt V-to-I movement (hence the pattern in (114)), English has affix-hopping in PF (hence the pattern in (113)). A parallel way to state the Cantonese-Mandarin difference could be that while Cantonese has a base-generated null Num which triggers overt Cl-movement, Mandarin creates the null Num later, by deleting an unstressed *yi* ‘one’ in PF. In both cases, the more synthetic languages employ overt movement, while the more analytic ones do not.

Regardless of which alternative is followed, the differences in derivational timing correctly characterize English and Mandarin Chinese as being more analytic than French and Cantonese, respectively.

7.2. Verb-object word order

These dialects also exhibit a pattern of variation in word order that can be similarly described in terms of a V-movement parameter. Liu (2002) has shown that Chinese dialects may be divided according to whether they are “strongly, mildly, or weakly VO-type” languages, and Cantonese, Mandarin and TSM are a member of each respective type. More specifically: (a) Cantonese is almost strictly SVO, with the verb preceding the object even when the object is definite or focalized; (b) Mandarin allows SVO or SOV order (preferring the latter for focalized objects); and (c) TSM strongly favors the SOV order. These are illustrated by the examples below:

(115) a. Ngo m jungyi bun syu. (Cantonese)
 I not like Cl book
 ‘I don’t like this book.’

b. ??Ngo bun syu m jungyi.
 I Cl book not like

(116) a. Wo bu xihuan zhe ben shu. (Mandarin)
 I not like this Cl book
 ‘I don’t like this book.’

b. Wo zhe ben shu bu xihuan.
 I this Cl book not like
 ‘I don’t like this book.’

(117) a. ??Goa khuaN bou chit pun chheh. (TSM)
 I read not this Cl book
 ‘I can’t read this book.’

b. Goa chit pun chheh khuaN bou.
 I this Cl book read not
 ‘I can’t read this book.’

We can characterize these differences in terms of whether V-movement across a definite object (in Spec of VP) is obligatory, optional or blocked—a pattern that again reflects their relative analyticity.

7.3. Other variations in V-movement

There are several other correlated variations among these dialects. Lamarre (2008) reports on a parametric difference in the choice between two forms expressing ‘he went to Beijing’:

(118) a. ta dao Beijing qu le.
 he toward Beijing go Perf/FP
 ‘He went to Beijing.’

b. ta qu Beijing le.
 he go Beijing Perf/FP
 ‘= (120a)’i

Option (b) represents the synthetic form and option (a) the analytic form. The synthetic form is obtained when a light null predicate replaces *dao* and triggers movement of *qu*. Lamarre notes that while Mandarin allows both options (a) and (b), Cantonese requires option (b), while an earlier stage of Mandarin (of the Ming-Qing period, 1368-1911 AD) allows only

option (a). A ranking of relative analyticity obtains among these dialects, then: Ming-Qing Mandarin > Modern Mandarin > Cantonese.

A difference between Mandarin and TSM with respect to causative incorporation is observed in Cheng, et al (1997). The following contrast is representative:

- (119) a. na ping jiu hai zan laoda he-zui le. (Mandarin)
 that bottle wine cause our big-brother drink-drunk FP
 ‘That bottle of wine caused our Big Brother to get drunk (from drinking it).’
- b. na ping jiu he-zui-le zan laoda. (Mandarin)
 that bottle wine drink-drunk-Perf our big-brother
 ‘That bottle of wine got our Big Brother drunk (from drinking it).’
- (120) a. hit guan jiu hai lan laodua-e lim-zui a. (TSM)
 that bottle wine cause our big-brother drink-drunk FP
 ‘= (119a)’
- b. *hit guan jiu lim-zui lan laoduo-e a. (TSM)
 that bottle wine drink-drunk our big-brother
 ‘Intended: = (119b)’

The Mandarin synthetic option (119b) is formed when a null light verb in place of *hai* ‘cause’ attracts the main verb *he-zui* ‘drink-drunk’. But the same process is unavailable in TSM as shown in (120b).

Finally, Tang (2006) shows that the above patterns of variation correspond to the distribution of aspectual suffixes among these dialects. In particular, while Mandarin aspectual suffixes are limited to the durative *zhe*, the perfective *le*, and the experiential *guo*, Cantonese allows higher-level elements to occur after aspectual suffixes (e.g., *sai* ‘all’, *tak* ‘only’, and *ngaang* ‘should’, suggesting that the verb (or VP) has moved to a higher position than in Mandarin. On the other hand, TSM aspects are expressed by lexical auxiliaries preceding the verb, rather than as suffixes. Thus, corresponding to Mandarin perfective and durative aspectual suffixes *-le* and *-zhe*, TSM resorts to the lexical auxiliaries *wu* ‘have’ and *ti* ‘be at’:

- (121) ta chang-le/zhe ge. (Mandarin)
 he sing-Perf/Dur song
 ‘He has sung / is singing songs.’
- (122) i u/ti chiuN kua. (TSM)
 He have/be-at sing song
 ‘He has sung / is singing songs.’

This means that while Mandarin and Cantonese have [-strong] suffixes that trigger Agree and covert V-movement (or Affix-Hopping in PF), TSM has lexical auxiliaries that are subject to neither process.

In short, we have seen that the analytic-synthetic opposition can be used to describe systematic and correlating differences among dialects, as it does for the description of large-scale typological variation and change. In the case of Chinese dialects, we see a number of correlating differences (with respect to classifier-phrase structure, verb-object order, causative incorporation, distribution of aspectual elements, etc.) jointly point to a systematic difference in relative analyticity among TSM, Mandarin and Cantonese.

8. Summary and conclusion

This chapter juxtaposed a number of salient syntactic properties of Modern Chinese and showed that, together and in comparison with English, they characterize Modern Chinese as a language of high analyticity at multiple levels—with respect to lexical structure, clausal functional structure, and argument structure. By contrast, we saw that Old Chinese differed consistently from Modern Chinese in displaying a range of properties that make it a language of considerable synthesis. OC and MnC mark two important stages in the long history of Chinese syntax, during which the language developed from considerable synthesis to high analyticity, peaking at Late Middle Chinese, before gradually acquiring some features of mild synthesis again, as seen among the modern dialects.

We saw that the typological features exhibit remarkable consistency, across different categories and different domains of grammar. Their joint occurrence in one language and joint absence in another points to the existence of macro-variations and macro-parameters. In each case of our observation, however, it was shown that each distinguishing property could be characterized by a micro-parameter defined over the nature of some lexical or functional items. We saw that the general features of a checking system, couched in a Principles-and-Parameters framework, shed light on the nature of synchronic variation and diachronic change. In the latter case, the parametric treatment of grammatical change accords well with grammaticalization research and captures some of its important insights, as has been shown in recent generative literature on historical syntax.

This picture, with observed macro-variation patterns that are, nevertheless, described in micro-parametric terms, brings us back to a question mentioned at the beginning, on the status of macro-parameters in current linguistic theory. As Baker (2008) argues, important generalizations would be lost in ‘a world of micro-parameters’ if nothing is done to explain the clustering of correlating parametric values that have been observed, both herein and elsewhere in the literature. For example, if each of the 14 properties mentioned above of Modern Mandarin (summarized in (20), (24) and (64)) were each derived from an independent micro-parameter, there could be as many as 16,384 (2 to the 14^{th} power) dialects realizing all the logical possibilities, but the overwhelming majority of these logical possibilities are clearly not realized. How do we explain this fact?

To be sure, at least in our case, the answer is not to give up the micro-parametric approach and return to a macro- or mega-parameter like [analytic] or [synthetic]. For one thing, the postulation of such parameters goes against the spirit of minimalist research and has to be abandoned in view of mounting evidence for the minimal size of UG. For another, a parameter like [α analytic] is too crude to capture the finer details of variation, including the fact that the analytic-synthetic opposition is a continuum, and a language is either more analytic or less so than another, but not in absolute terms. And, the extent of property-clustering may vary from language to language: not all languages exhibit consistent

analyticity or synthesis across all categories (see note 7). In fact, a given property could be subject to lexical variation within a given language or dialect as well.³⁶

There are other considerations relevant to a full discussion on the tension between micro- and macro-parameters, but I will leave this with a reference to a plausible answer in recent works that suggest an independent mechanism for deriving macro-parametric effects from micro-parameters—in particular the recent proposal in Roberts and Holmberg (2010) that macro-parameters exist as “aggregates of micro-parameters acting in concert” as a result of children’s conservative learning strategy. Very simply put, the macroparameters-as-aggregates hypothesis assumes that children will generalize the value of a fixed micro-parameter concerning one lexical or functional category to a similar parameter concerning other categories. If a given formal property for a given light verb has its value set at [+strong], then the same value setting is assumed for light nouns, light adjectives, and light prepositions, etc., and conversely a [-strong] setting for a given category will be generalized to other categories, unless evidence to the contrary is encountered, in which case a departure from the default will result. This would be sufficient to explain the correlation of properties that give rise to macro-parameters as observed without having to postulate macro-parameters as irreducible primitives. Future research will be needed to determine how far this hypothesis can go, for all apparent cases of macro-variation, both here and in other languages.

References

- Aldridge, Edith. 2012. Focus and Archaic Chinese word order. *Proceedings of NACCL-22 and IACL-18*, ed. by Louis Liu & Lauren Eby, 84-101. NACCL Proceedings Online, http://chinalinks.osu.edu/naccl/naccl-22/NACCL-22_Proceedings.htm.
- Aldridge, Edith. 2013. PPs and applicatives in Late Archaic Chinese. *Studies in Chinese Linguistics* 33:139-164.
- Baker, Mark. 1988. *Noun incorporation*. Chicago: Chicago University Press.
- Baker, Mark. 1996. *The polysynthesis parameter*. Oxford: Oxford University Press.
- Baker, Mark. 2008. The macroparameter in a microparametric world. In *The limits of syntactic variation*, ed. by T. Biberauer, 351-374. Amsterdam: John Benjamins.
- Baker, Mark. 2011. On the syntax of surface adjacency: the case of pseudo noun incorporation. Paper presented at the Workshop on Syntax-Semantics Interfaces. Academia Sinica, Taipei.
- Borer, Hagit. 1984. *Parametric syntax: Case studies in Semitic and Romance languages*. Dordrecht: Foris Publications.
- Borer, Hagit. 2005. *In name only*. Structuring Sense, Volume I. Cambridge, MA: Oxford University Press.
- Chao, Yuen-Ren. 1948. *Mandarin primer*. Cambridge, MA: Harvard University Press.
- Cheng, Lisa Lai-Shen. 1991. The typology of *wh*-questions. Doctoral dissertation, MIT.
- Cheng, Lisa L.-S., C.-T. James Huang, Y.-H. Audrey Li, & C.-C. Jane Tang. 1997. Causative compounds across Chinese dialects: a study of Cantonese, Mandarin and Taiwanese. *Chinese Languages and Linguistics* 4: 199-224.
- Cheng, Lisa L.-S. & Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30: 509-542.
- Cheng, Lisa L.-S. & Rint Sybesma. 2005. Classifiers in four varieties of Chinese. In *Handbook of comparative syntax*, ed. by Guglielmo Cinque and Richard S. Kayne, 259-292. Oxford: Oxford University Press.
- Chierchia, Gennaro. 1998. Plurality of mass nouns and the notion 'semantic parameter'. In *Events in grammar*, ed. by Susan Rothstein, 53-103. Dordrecht: Springer.
- Chomsky, Noam. 1973. Conditions on transformations. In *Festschrift for Morris Halle*, ed. by Stephen Anderson & Paul Kiparsky, 232-286. New York: Holt, Rinehart & Winston.

- Chomsky, Noam. 1991. Some notes on economy of derivation and representation. In *Principles and parameters in comparative grammar*, ed. by Robert Freidin. Cambridge, MA: MIT Press. [Also reprinted as Chapter 2 of Chomsky 1995.]
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1999. Minimalist inquiries: the framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89-155. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2005. Three factors in language design. *Linguistic Inquiry* 36: 1-22.
- Christensen, Kirsti-Koch. 1986. Norwegian *ingen*: a case of post-syntactic lexicalization. In *Scandinavian Syntax*, ed. by Ö. Dahl & A. Holmberg. Stockholm: Institutionen för lingvistik, Stockholms universitet.
- Cinque, Guglielmo. 1999. *Adverbs and functional heads*. Oxford: Oxford University Press.
- Davidson, Donald. 1967. The logical form of action sentences. In *The logic of decision and action*, ed. by N. Rescher, 81-95. Pittsburgh: University of Pittsburgh Press.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.
- Djamouri, Redouane, Waltraud Paul & John Whitman. 2013. Syntactic change in Chinese and the argument-adjunct asymmetry. In *Breaking down the barriers*, ed. by xxxxxx, xxxxx, & xxx, 000-000. Taipei: Institute of Linguistics, Academia Sinia.
- Dong, Hongyuan. 2005. Gradable adjectives in Chinese and degree morphemes. Ms. Cornell University.
- Dowty, David. 1979. *Word meaning and Montague Grammar*. Dordrecht: Springer.
- Embick, David. 2007. Blocking effects and analytic/synthetic alternations. *Natural Language & Linguistic Theory* 25:1-37.
- Emonds, Joseph. 1978. The verbal complex V'-V in French. *Linguistic Inquiry* 9: 151-175.
- Feng, Shengli. 1996. Prosodically constrained syntactic changes in early Archaic Chinese. *Journal of East Asian Linguistics* 5: 323-371.
- Feng, Shengli. 2005. Qingdongci yiwei yu gujin Hanyu de dongbin guanxi [Light-verb movement and verb-object relation in Modern and Classical Chinese]. *Yuyan Kexue* [Linguistic Sciences] 1: 3-16.
- Feng, Shengli. 2013. Historical syntax of Chinese. In *Handbook of Chinese linguistics*, ed. by C.-T. James Huang, Y.-H. Audrey Li & Andrew Simpson, 000-000. Malden, MA: Wiley-Blackwell Publishers.

- Gelderen, Elly van. 2011. *The linguistic cycle: language change and the language faculty*. Oxford & New York: Oxford University Press.
- Giannakidou, Anastasia. 2002. Licensing and sensitivity in polarity items: from downward entailment to (non-)veridicality. *Proceedings of CLS 39*. Chicago: Chicago Linguistic Circle.
- Gianollo, Chiara, Cristina Guardiano & Giuseppe Longobardi. 2008. Three fundamental issues in parametric linguistics. In *The limits of syntactic variation*, ed. by Theresa Biberauer, 109-142. Amsterdam: John Benjamins.
- Greenberg, Joseph H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In *Universals of grammar*, ed. by Greenberg, Joseph H., 73-113. Cambridge, MA: MIT Press.
- Hale, Kenneth. 1983. Warlpiri and the grammar of non-configurational languages. *Natural Language & Linguistic Theory* 1: 5-47.
- Hale, Kenneth & Samuel J. Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from Building 20: Essays in honor of Sylvain Bromberger*, ed. by Hale, K. and S. J. Keyser, 53-109. Cambridge, MA: MIT Press.
- He, Chuansheng. 2008. Verb movement in Archaic Chinese. Ms., Hong Kong Polytechnic University.
- Heim, Irene, Howard Lasnik & Robert May. 1991. Reciprocity and plurality. *Linguistic Inquiry* 22: 63-101.
- Holmberg, Anders. 2010. Parameters in minimalist theory: The case of Scandinavian. *Theoretical Linguistics* 36: 1-48.
- Hu, Chirui. 2005. Cong yinhan dao chengxian I [From covert to overt I] *Yuyanxue Luncong* 31: 1-22.
- Hu, Chirui. 2008. Cong yinhan dao chengxian II [From Covert to Overt II]. *Yuyanxue Luncong* 38: 99-127.
- Huang, C.-T. James. 1982 [1998]. *Logical relations in Chinese and the theory of grammar*. Doctoral dissertation, MIT. (Published in 1998 by Garland Publishing, Inc.)
- Huang, C.-T. James. 1984. Phrase structure, lexical integrity, and Chinese compounds. *Journal of the Chinese Language Teachers Association* 19: 53-78.
- Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese phrase structure. *Language* 64: 274-311.

- Huang, C.-T. James. 1995. Historical syntax meets phrase structure theory, paper presented at IACL-4, University of Wisconsin at Madison, 1995.
- Huang, C.-T. James. 1997. On Lexical structure and syntactic projection. *Chinese Languages and Linguistics* 3: 45-89.
- Huang, C.-T. James. 2003. The Distribution of negative NPs and some typological correlates. In *Functional structure(s), form and interpretation*, ed. by Y.-H. Audrey Li & Andrew Simpson, 262-280. New York: Routledge, 2003.
- Huang, C.-T. James. 2005. Syntactic analyticity: the other end of the parameter. Lecture notes, 2005 LSA Linguistic Institute, Harvard University and MIT.
- Huang, C.-T. James. 2006a. Resultatives and unaccusatives: a parametric view. *Bulletin of the Chinese Linguistic Society of Japan* 253:1-43.
- Huang, C.-T. James. 2006b. The macro-history of Chinese syntax and the theory of change. Paper presented at the Workshop on Chinese Linguistics, University of Chicago.
- Huang, C.-T. James. 2010. Lexical decomposition, silent categories, and the localizer phrase. *Yuyanxue Luncong* 39: 86-122.
- Huang, C.-T. James. 2013. Variations in non-canonical passives. In *Non-canonical passives*, ed. by Artemis Alexiadou & Florian Schaefer, 95-114. Amsterdam: John Benjamins.
- Huang, C.-T. James & Masao Ochi. 2004. Syntax of the hell. In *Proceedings of NELS-34*, 000-000.
- Jelinek, Eloise. 1984. Empty categories, case and configurationality. *Natural Language and Linguistic Theory* 2: 39-76.
- Jiang, L. Julie. 2012. *Nominal structure and language variation*. Doctoral dissertation, Harvard University.
- Johnson, Kyle B. 1994. Bridging the gap. Ms., University of Massachusetts, Amherst.
- Johnson, Kyle. 2009. Gapping is not (VP-)ellipsis. *Linguistic Inquiry* 40: 289-328.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
- Kayne, Richard. 1998. Overt vs. covert movement. *Syntax* 1: 128-191.
- Kayne, Richard. 2005. *Movement and silence*. Oxford: Oxford University Press.
- Kayne, Richard. 2013. Comparative syntax. *Lingua* 130: 132-151.
- Kennedy, Chris. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. Ms., University of Chicago.

- Kim, Young-Wha, ed. 2011. *Plurality in classifier languages*. Seoul: Hankook Munhwasa Publishing.
- Kiparsky, Paul. 2005. Blocking and periphrasis in inflectional paradigms. *Yearbook of Morphology* 2005:113–135.
- Kiss, Katalin. 1998. Identificational focus versus information focus. *Language* 74: 245-273.
- Krifka, Manfred. 1987. Common nouns: a contrastive analysis of Chinese and English. In *The generic book*, ed. by Gregory Carlson & F. Jeffry Pelletier, 398-411. Chicago: University of Chicago Press.
- Kuo, Chin-Man. 1996. The interaction between *daodi* and *wh*-phrases in Mandarin Chinese. Ms., University of Southern California.
- Lamarre, Christine. 2008. Divergent evolution of directionals in two non-standard varieties of Sinitic. Paper presented at the symposium “The Past Meets the Present”, Academia Sinica.
- Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19: 335-391.
- Lasnik, Howard. 1995. Verbal morphology: Syntactic Structures meets the Minimalist Program. In *Evolution and revolution in linguistic theory: Essays in honor of Carlos Otero*, ed. by H. Campos & P. Kempchinsky, 251-275. Washington, D.C.: Georgetown University Press.
- Lasnik, Howard. 1999. On feature strength: Three minimalist approaches to overt movement. *Linguistic Inquiry* 30:197-217.
- Lasnik, Howard. 2003. *Minimalist investigations in linguistic theory*. New York: Routledge.
- Lasnik, Howard & Mamoru Saito. 1984. On the nature of proper government. *Linguistic Inquiry* 15: 235-289.
- Levin, Beth & Malka Rappaport Hovav. 1995. *Unaccusativity: at the syntax-lexical semantics interface*. Cambridge, MA: MIT Press.
- Li, Y.-H. Audrey. 1992. Indefinite *wh* in Chinese. *Journal of East Asian Linguistics* 1:125-156.
- Li, Y.-H. Audrey. 1998. Determiner phrases and number phrases. *Linguistic Inquiry* 29: 693-702.
- Lin, T.-H. Jonah. 2001. *Light verb syntax and the theory of phrase structure*. Doctoral dissertation, University of California, Irvine.

- Lin, T.-H. Jonah & C.-Y. Cecilia Liu. 2005. Coercion, event structure and syntax. *Nanzan Linguistics* 2: 9-31.
- Lin, T.-H. Jonah. 2013. Light verbs. In *Handbook of Chinese linguistics*, ed. by C.-T. James Huang, Y.-H. Audrey Li & Andrew Simpson, 000-000. Malden, MA: Wiley-Blackwell Publishers.
- Lin, Jo-Wang. 1998. On existential polarity *wh*-phrases in Chinese. *Journal of East Asian Linguistics* 7: 219-255.
- Liu, Danqing. 2002. Hanyu fangyan de yuxu leixing bijiao [A comparative study of word order types among Chinese dialects]. In *Cong yuyi leixing dao leixing bijiao [From semantic types to typological comparison]*, ed. by Youwei Shi, 222-244. Beijing: Beijing Language & Culture University Press.
- Longobardi, Giuseppe. 1994. Reference and proper names: a theory of N-movement in syntax and logical form. *Linguistic Inquiry* 25: 609-665.
- Liu, Jingnong. 1958. *Hanyu wenyan yufa [Grammar of Classical Chinese]*. Taipei: Chung-Hua Shuju.
- Lu, Guo-Yao. 1982. Mengzi yi yang yi zhi, yi zhi yi yang liangzhong jiegou leixing de duibi yanjiu [A study of the contrast between *yi yang yi zhi* and *yi zhi yi yang* in the Mencius]. In *Xianqin Hanyu yanjiu [Studies on Pre-Qin Chinese]*, ed. by Cheng Xiangqing, 272-290. Jinan: Shandong Educational Press.
- Ma, Jianzhong. 1898. *Ma shi wentong [Ma's Grammar]*. Beijing: Commercial Press.
- Massam, Diane. 2001. Pseudo noun incorporation in Niuean. *Natural Language & Linguistic Theory* 19: 153-197.
- McCawley, James D. 1969. Lexical insertion in a transformational grammar without deep structure. *Proceedings of CLS* 4: 000-000. Chicago: Chicago Linguistic Society.
- Mei, Kuang. 2003. Yingjie yige kaozhengxue he yuyanxue jiehe de hanyuyufashi yanjiu de xin jumian [Anticipating a new horizon of the historical syntax of Chinese incorporating philology and linguistics]. In *Gujin tongsai: Hanyu de lishi yu fazhan (Historical development of Chinese language)*, ed. by Dah-An Ho, 23-47. Taipei: Institute of Linguistics, Academia Sinica.
- Mei, Tsu-lin. 1989. The causative and denominative functions of the *s- prefix in Old Chinese. In *Proceedings of the 2nd International Conference on Sinology*, 33-51. Taipei: Academia Sinica.
- Mei, Tsu-Lin. 1991. Cong han dai de *dong-sha* he *dong-si* lai kan dongbu jiegou de fazhang [On the historical development of the 'verb-result complement' construction based on

- V-kill and V-die in the Han Dynasty]. *Yuyanxue Luncong* [Essays on Linguistics] 16: 112-136.
- Mei, Tsu-Lin. 2008a. Jiaguwen li de jige fufuyin shengmu [Some consonant cluster in oracle bone inscriptions]. *Zhongguo Yuwen* 2008.3:195-207. (In Chinese)
- Mei, Tsu-Lin. 2008b. Shanggu Hanyu dongci zhao-qing bieyi de lai yuan [The origin of voicing alternation in Old Chinese verbs]. *Minzu Yuwen* 2008 (3):3-20. (In Chinese)
- Mei, Tsu-lin. 2012. The causative *s- and nominalizing *-s in Old Chinese and related matters in Proto-Sino-Tibetan. *Language and Linguistics* 13: 1-28.
- Parsons, Terence. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.
- Paul, Waltraud. 1999. Verb gapping in Chinese: A case of verb raising. *Lingua* 107: 207-226.
- Peyraube, Alain. 1996. Recent issues in Chinese historical syntax. In *New horizons in Chinese linguistics*, ed. by C.-T. James Huang & Y.-H. Audrey Li, 161-214. Dordrecht: Springer.
- Peyraube, Alain. 2003. On the history of place words and localizers in Chinese: a cognitive approach. In *Functional structure(s), form and interpretation*, ed. by Y.-H. Audrey Li & Andrew Simpson, 180-198. London: Routledge-Curzon.
- Pesetsky, David. 1987. Wh-in-situ: Movement and unselective binding. In *The representation of (in)definiteness*, ed. by Eric Reuland & Alice ter Meulen, 98-129. Cambridge, MA: MIT Press.
- Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20: 365-424.
- Poser, William. 1992. Blocking of phrasal constructions by lexical items. In *Lexical matters*, ed. by Ivan Sag & Anna Szabolsci, 111-130. Stanford: CSLI Publications.
- Pustejovsky, James. 1995. *The generative lexicon*. Cambridge, MA: MIT Press.
- Rizzi, Luigi. 1982. *Issues in Italian syntax*. Dordrecht: Foris Publications.
- Roberts, Ian. 2007. *Diachronic syntax*. Oxford: Oxford University Press.
- Roberts, Ian & Anders Holmberg. 2010. Introduction: parameters in minimalist theory. In *Parametric variation: null subjects in minimalist theory*, ed. by Theresa Biberauer, Anders Holmberg, Ian Roberts & Michelle Sheehan, 1-57. Cambridge: Cambridge University Press.
- Roberts, Ian & Anna Roussou. 2003. *Syntactic change: a minimalist approach to grammaticalization*. Cambridge: Cambridge University Press.

- Safir, Ken, & Tim Stowell. 1988. Binominal *each*. In *Proceedings of NELS 28*: 426–450.
- Sanders, Gerald & James H.-Y. Tai. 1972. Immediate dominance and identity deletion. *Foundations of Language* 8:161-198.
- Sapir, Edward. 1921. *Language: An introduction to the study of speech*. New York: Harcourt Brace Jovanovich.
- Shen, Yang & Sybesma, Rint. 2010. Jufa jiegou biaoji *gei* yu dongci jiegou de yansheng guanxi [On the marker *gei* and its relation to the derivation of VP structure]. *Zhongguo Yuwen*. 2010.3: 222–237.
- Simpson, Andrew. 2005. Classifiers and DP Structure in Southeast Asia. In *The Oxford Handbook of Comparative Syntax*, ed. by Guglielmo Cinque & Richard Kayne, 806–838. Oxford: Oxford University Press.
- Simpson, Jane. 1983. Resultatives. In *Papers in lexical-functional grammar*, ed. by L. Levin et al, 143–157. Bloomington, Indiana: Indiana University Linguistics Club.
- Soh, Hooi Ling. 1998. *Object scrambling in Chinese*. Doctoral dissertation, MIT.
- Stowell, Tim. 1981. *Origins of phrase structure*. Doctoral dissertation, MIT.
- Sybesma, Rint. 1992. *Causatives and accomplishments: the case of Chinese ba*. Doctoral dissertation, Leiden University.
- Sybesma, Rint. 1998. *The Mandarin VP*. Dordrecht: Springer.
- Tai, James H.-Y. 1984. Verbs and times in Chinese: Vendler's four categories. In *Papers from the parasession on lexical semantics*, ed. by Testen, David; Veena Mishra, and Joseph Drogo, 000–000. Chicago: Chicago Linguistic Society.
- Tang, C.-C. Jane. 1990. *Phrase structure in Chinese and the extended X-bar theory*. Doctoral dissertation, Cornell University.
- Tang, Sze-Wing. 2001. The (non-)existence of gapping in Chinese and its implications for the theory of gapping. *Journal of East Asian Linguistics* 10: 201–224.
- Tang, Sze-Wing. 2006. Hanyu fangyan shoushi huatiju leixing de canshu fenxi [A parametric analysis of the typology of theme topics in Chinese dialects]. *Yuyan Kexue [Linguistic Sciences]*, 5:3–11.
- Ting, Jen. 2010. On the climbing of the particle *suo* in Mandarin Chinese and its implications for the theory of clitic placement. *The Linguistic Review* 27: 449–483.
- Tsai, W.-T. Dylan. 1994. *On economizing A-bar dependencies*. Doctoral dissertation, MIT.
- Tsai, W.-T. Dylan. 2001. On subject specificity and theory of syntax-semantics interface. *Journal of East Asian Linguistics* 10: 129–168.

- Uriagereka, Juan. 1998. *Rhyme and Reason*. Cambridge, MA: MIT Press.
- Vendler, Zeno. 1967. *Linguistics in philosophy*. Ithaca: Cornell University Press.
- Wei, Pei-Chuan. 2003. Shangu Hanyu dao zhonggu Hanyu yufa de zhongyao fazhan [Important developments from Archaic to Middle Chinese grammar]. In *Gujin Tongsai: Hanyu de lishi yu fazhan [History and Development of Chinese Language]*, ed. Dah-An Ho, 75-106. Taipei: Academia Sinica.
- Wu, Hsiao-hung Iris. 2002. On ellipsis and gapping in Mandarin Chinese. MA thesis, National Tsing Hua University.
- Xu, Dan. 2006. *Typological change in Chinese syntax*. Oxford & New York: Oxford University Press.

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Notes

¹ In other works, this construction has been known as the ‘anti-passive’ construction.

² That the Chinese expressions are *phrases* rather than words is clearly evidenced by the position of the aspectual suffix *-le* and intervening adverbial expressions:

- (i) ta zhuo-le san tian yu.
 s/he catch-Perf three day fish
 ‘He/she fished for 3 days.’
- (ii) ta nian-le liangge zhongtou (de) shu.
 s/he read-Perf two hours (of) book
 ‘He/she read for two hours.’

That is, incorporation in English results in a lexical category, while pseudo-incorporation or the use of a light verb results in a phrasal category.

³ The constructions are said to involve ‘pseudo incorporation’ (in Massam 2001) because, in spite of their phrasal status, they correspond to simplex denominal or intransitive verbs which are, in the prevalent syntactic literature (Baker 1988, Hale & Keyser 1993 and subsequent works), considered to be derived via noun incorporation in the more synthetic languages (from English to Mohawk). The semantics of a PNI construction exhibits the characteristics of a lexical word or compound, with the object NP being morphologically bare and referentially non-denoting.

⁴ The verb *xie* ‘write’ can be telicized with a quantified object:

- (i) ta 30 fenzhong nei, jiu xie-le wu-feng xin.
 he 30 minute in, then write-le 5-cl letter
 ‘He wrote 5 letters in 30 minutes.’

⁵ As early as his (1948), Y.-R. Chao already referred to classifiers as ‘auxiliary nouns’. One might as well consider the light verbs as auxiliary verbs (in the sense that they take VP complements). Tang (1990) was the first to argue that classifiers should head a noun phrase

within Abney's DP system. In particular, in parallel to the CP-TP-VP layers on the 'clausal spine', we have DP-CIP-NP in the 'nominal spine'. These assumptions about nominal (and clausal) structures are much in the spirit of these earlier works.

⁶ Krifka (1995) specifically proposes that all Chinese nouns denote kinds as their elementary meanings. The requirement of an individual classifier is often likened to the obligatory use of a measure word in association with a mass noun, e.g., *a *(cup of) water*, and so all Chinese nouns are likened to mass nouns in their extensions (Chierchia 1998), which leads to the prediction that numeral classifier languages cannot have plural markings. This further assimilation of all nouns to mass nouns has turned out to be controversial (Cheng & Sybesma 1999, and Kim 2010, among many others). The real generalization is simply that Chinese count nouns are number-neutral, whereas English bare count nouns denote singular atoms. Mass nouns universally, on the other hand, are number-irrelevant since they denote entities that are cumulative and homogeneous, unless atomized with appropriate measure words.

⁷ Not all languages exhibit consistent analyticity or synthesis across all categories. For example, while many other analytic languages of Asia have both light verbs and classifiers, many analytic languages of Africa (Ewe, Yoruba, etc.) make heavy use of light verbs and pseudo-incorporation, but not of classifiers of the kind familiar from Chinese. As has been noted by Sapir, analyticity is quantitative and relative, but not absolute. In this case, Chinese is 'better behaved' than Yoruba in cross-categorial analyticity, much as Japanese is better behaved than German with respect to cross-categorial head-finalness.

⁸ The theory of lexical decomposition has its early origin in McCawley (1969), and was revived in Baker (1988), Larson (1988) and Huang (1988). It is widely adopted nowadays in various versions of syntactic theory. Much of the syntax reflects the semantic insights of Davidson (1967), revived in Parsons (1990) and more recent semantic works.

⁹ The same can be said of the universal *wh-ever* words (*whoever, whatever, wherever*, etc.), which do move overtly, though not *some-wh* words (*somewhat, somewhere, somehow*, etc.). In this respect, though, we find a parallel situation in Chinese, in that the *wh*-words must occur or move to the left of its licenser *dou* to obtain the universal reading, though the existential *wh*-phrase is simply licensed in situ, in an affective or non-veridical context.

¹⁰ The expression *daodi* with its literal meaning 'reach-bottom', conveys an attitude of impatience or annoyance (i.e., let's get to the bottom of the damn question, quick!), much as the *wh-the-hell* expressions in English.

¹¹ In Huang (1982) and subsequent developments (e.g., Lasnik & Saito 1984, a.o.), the trace of an adjunct created in LF would not be properly governed, in violation of the ECP. Kuo (1996) showed that the distribution and interpretation of *daodi* questions exhibit clear Subjacency, CED (and ECP) effects. Huang & Ochi (2004) argue that this follows from the LF movement

¹² A second strategy involving object pre-posing is available, and it can be said that Chinese does have 'nobody' in preverbal positions. (Cf. Huang 2003 for discussion.)

¹³ Earlier treatments (e.g., Chomsky 1973 following earlier work by Ray Dougherty) employ *each*-lowering to derive (44b). In the interpretative framework, Heim, Lasnik &

May (1991) propose a *each*-raising rule to derive various interpretations associated with the reciprocal construction. The crucial difference is simply that the related operations are not triggered in Chinese.

¹⁴ As amusingly suggested by a participant in my 1996 seminar at the Girona Summer Institute of Linguistics. There is no requirement that the verb must be followed by something, of course (e.g., as in the case of an intransitive sentence). Note that the PSC as originally proposed, while useful as a point of departure for much discussion, had theoretical and empirical problems that now disappear when it's seen as a consequence of Kayne's LCA and the hypothesis that Chinese has V-to-V and V-to-v, but no v-to-T movement.

¹⁵ See Soh (1988) for more discussion of vP-internal head movement.

¹⁶ The same ATB movement also derives corresponding sentences in English like *He put the book on the table and the pencil on the chair*.

¹⁷ Recall that, although V-movement may cross a low incidentive adjunct (like '3 times'), a question arises concerning the verb's position when suffixed with aspect markers like *-le*, *-zhe*, *-guo*. Since these aspectual categories are semantically higher in position than manner adverbs like *xiaoxindi* 'carefully' or means adverbs like *yong daozi* 'with a knife', and yet the verb+aspect combination occurs syntactically lower than these adverbs, I shall assume that Chinese aspectual suffixes only trigger Agree in Syntax but undergo Aspect Hopping in PF (keeping with the familiar treatment of Tense in English) or covert movement in LF.

¹⁸ Sanders & Tai (1972) proposed to account for the difference by an immediate dominance condition that applies to Chinese but not to English. This begs the same question, of course.

¹⁹ Cf. Paul (1999), who argues for the existence of some limited cases of gapping in Mandarin, and for potential verb-raising beyond the vP.

²⁰ Many (possibly related) examples in English also do not find their Chinese counterparts, including *An occasional woman in America speaks Finnish*; *Let's have a quick cup of coffee*; etc., though it is not clear how it can be accommodated by an event place in the semantic structure of objectual nouns like *woman* and *coffee*.

²¹ The same applies to the compounds, with the assumption that there is a null DE or GET with inchoative-causative alternation, to which the overt verb is attached as an adjunct, in PF. In English, movement into GET in overt syntax requires Agree in relevant theta-features, thus preventing an unergative verb from filling the position of an inchoative GET.

²² This last characterization is somewhat paradoxical. This arises from the fact that in addition to the overt, fully lexical categories, Modern Chinese has also developed the use of affixal and/or silent light verbs. But these categories are without formal features that trigger agreement-based movement, and they only require phonetic licensing at PF.

²³ Many causatives also have both a physical and 'mental' sense. The causative verb *xiao* could mean 'to make x small' or 'to consider x to be small' (the latter expressing a mental causation, also termed 'putative' use, i.e., 'to claim x to be small'). Other well known examples include 好 *hao* (with the stative 'good' and the putative 'consider x to be good' =

‘like x’), and 賢 *xian* (alternating between ‘able, virtuous’ and ‘consider x to be virtuous = value x for x’s abilities and virtues’). See K. Mei (2003) and Feng (2005).

²⁴ The rise of the resultative compound was triggered by the loss of the *s- prefix from the causative verbs, and a subsequent initial-devoicing, causing opacity of the causative-inchoative distinction in the child’s primary linguistic data, which in turn led to a reanalysis that treats all verbs as non-causative, hence atelic. See Mei (1991), Huang (1995), Wei (2003) and Feng (2013) for discussion.

²⁵ A question may arise as to why the availability of denominal verbs and simplex causatives implies the absence (or infrequent occurrence) of the light verb construction, pseudo-incorporation, and compound and phrasal accomplishments. A plausible explanation is the notion of ‘synthetic blocking’ (see Poser 1992, Kiparsky 2005, and Embick 2007). If a language has *kill* as a synthetic accomplishment verb, one would not resort to a (less economical) analytic or periphrastic version such as *John caused him to become not alive*. The latter is perhaps fully grammatical still, but is simply ‘shelved’, unless there is a special reason that calls for the use of the analytic form. This must be the case in OC, at least as far as the causatives are concerned. Periphrastic expressions involving such verbs as *shi* and *ling* (both meaning ‘cause’) are easily attestable in the classical texts and can safely be assumed to be available in the oral language of the time.

²⁶ I shall leave aside the exact details of the analysis, especially concerning the position of the relative pronoun *suo* and the negative morpheme *bu* and its related cousins *wu*, *wei*, *mo*, etc., and the preposed object pronoun under it. *Suo* originated as a place word with [+operator] feature but was generalized for the relativization of other categories (a situation also attested in other languages, including Swiss German and Modern Greek, see Huang 2010) and was aptly analyzed as a relative pronoun in Ma (1898); Ting (2010) argues that it has the property of a climbing clitic. As for the negative operator, the literature includes various claims: that it is a Spec, or a head, or an adjunct. I tentatively assume that it can be base-generated in Spec of the FP. I also assume that the movement of the interrogative *wh*-phrase, the *only*-phrase, and the relative pronoun is A-bar movement, and this explains the possibility of ‘clitic doubling’ by a resumptive pronoun (at least in the case of *wh*- and *only*-phrase movement). See Aldridge (2012), and Feng (1996) for more detailed discussions.

²⁷ If the alternation in (100) is motivated by focus (as asserted by Liu 1958), note that the focus in this case is not on the fronted VP, but what is left behind. The VP fronting may well be a strategy to highlight an information focus as opposed to identification focus (in the sense of Kiss 1998), i.e., by vacating the non-focalized VP out of the focus position.

²⁸ One important argument Aldridge adduces in support of the VP-movement analysis is that it correctly predicts that *wh*-movement of *sheep* is possible only if VP-movement has not taken place—as in (100a), but impossible if it has—as in (100b) or (101). A similar contrast could be observed in English: ‘Which sheep (did you) use *t* to replace the cow?’ vs. *Which sheep_i [to replace the cow] (did you) use *t_i*? VP-movement of *to replace the cow* bleeds *wh*-movement of *which sheep*.

²⁹ Since (the relevant) postverbal adjuncts are not possible in MnC, the verb must have moved higher in OC than in MnC. There is some doubt about the movement when the

object is non-referential and presumably occurs lower than an adjunct, and so a smaller-scale VP movement might still be involved in deriving postverbal adjuncts.

³⁰ This cycle of change is commonly observed, both in macro-patterns for a language and on micro-scales for particular linguistic units—the most famous being the “Jespersen’s cycle” concerning English negation, which is replicated in many other languages. See Gelderen (2011 and references therein) for extensive treatment of this topic from the perspective of Minimalist parametric theory.

³¹ The BCP in Cantonese may have either definite or indefinite interpretation, with the definite interpretation being required in the subject position, as in (108a).

³² See Cheng and Sybesma (2005) and Tang (2006) for further discussion of the phenomenon in Wu and Xiang dialects. See also Jiang (2012) for arguments in favor of the traditional ‘one’-deletion analysis.

³³ An alternative is to follow Tsai (2001) who attributes the pattern to Diesing’s (1992) Mapping Hypothesis requiring that materials in the IP domain be mapped to specific readings, and that a bare classifier phrase (BCP) can only be interpreted as non-specific. The validity of this claim is now less clear in view of Jiang’s (2012) recent finding that a BCP in Mandarin can in fact be specific, a point also attested in (102), where the BCP is governed by the preposition *ba*.

³⁴ Unless it is immediately preceded by a demonstrative which may serve as its head-governor: *zhe ben shu*, *na ben shu*, etc.

³⁵ We assume that Cl-to-D movement is optional, since a BCP in Cantonese may also have indefinite reference, when it does not occur in subject position. In Mandarin, since there is no Cl-to-Num movement, the Cl never has a chance to fill the D position, so only the indefinite reading is available.

³⁶ As illustrated by some of the examples of inter-dialectal variation discussed above. Another case in point is the existence in Mandarin of certain verb-object combinations that differ in their degree of analyticity: among the so-called V-O compounds, *bo-pi* ‘peel’ is a phrase (hence a case of pseudo-incorporation), *chu-ban* ‘publish’ is a word (hence a case of noun-incorporation), while *dan-xin* ‘worry’ has an intermediate status and can be used in either way (see Huang 1984).