Contrastive Analysis of Chinese and English Syntax

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A Generative Introduction

By

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PREFACE

I have been teaching "CHIN462/562 Contrastive Analysis of Chinese and English Language" at California State University at Long Beach (CSULB) for more than fifteen years. It was first offered to Chinese majors, MA students in Asian Studies at the Department of Asian and Asian American Studies (AAAS), and MA students from the Department of Linguistics. In 2015, a minor in "Chinese Language and Culture" was created at CSULB, which is followed by an addition of an MA option in Chinese Studies under Asian Studies in 2016. The Chinese Studies MA option has two tracks – a general track in Chinese Studies and a specific track in Teaching Chinese as a Foreign Language (TCFL). The general track in Chinese Studies was incorporated with Asian Studies MA in 2019. Students who are enrolling in CHIN462/562 currently are Chinese minors, majors and MA students specialized in TCFL. MA students from the Department of Linguistics and post-baccalaureate students in the single or multiple credential programs from the College of Education are also attending the class. Among all these students, only Chinese MA students specialized in TCFL are required to take CHIN462/562. For all others, it is an elective course at the upper division (CHIN462) or MA level (CHIN562).

The biggest challenge for teaching the course is to search for updated teaching and referential materials. The course covers multiple domains for comparison between the Chinese and English language, including sound patterns (phonology), word formation (morphology), sentence structure (syntax), and meaning (semantics, e.g., lexicalization). It is impossible to find a single book that I or the students can refer to. It has been a constant struggle in compiling and selecting teaching materials from journal papers, online writings and book chapters. The idea of writing a reference book was gradually rooted in my mind.

I applied for a sabbatical for Spring 2020 with the aim of writing the book and was granted. I finished the first draft by the October of 2020. The original title of the book was "Contrastive Analysis of Chinese and English Language," which covers all domains for comparison, i.e., phonology, morphology, syntax and semantics. But then we were hit by the pandemic. The book project was cut short. Only the syntax part was finally finished with multiple revisions. A book proposal for "Contrastive Analysis of Chinese and English Syntax" was finally submitted to Cambridge Scholars

Publishing (CSP) for a review in summer 2023 and accepted in fall 2023 after the board review.

Over the pandemic, different versions of the book manuscript have been test-used in CHIN462/562. I thank students in various CHIN462/562 cohorts for their valuable comments and suggestions. In particular, I thank the CHIN462/562 cohort in Fall 2002, which has provided me with the most concrete feedback for the book. Among all students, special thanks go for Bridget Naylor, James Levine and Wataru Watanabe. I also thank Prof. Liya Ao at CSULB for her invaluable comments and suggestions. I also thank her for proof-reading multiple versions of the book, and check for my English grammar and errors. I further thank CSULB for granting the sabbatical for me in Spring 2020, without which this book would not be possible. I am solely responsible for any errors in the book.

INTRODUCTION

This book introduces a contrastive analysis of Chinese and English syntax based on generative grammar. It covers major syntactic domains for comparison, including but not limited to noun phrases, verb phrases, the inflectional domain, the discourse-related domain and ellipsis. Based on the empirical data drawn from both Chinese and English, and recast in modern linguistic terminology, various rules and theoretical modules from the generative framework are introduced to analyze the similarities and differences between Chinese and English syntax.

1. Theoretical background

The generative grammar was established by Noam Chomsky in the 1950s. Multiple models for the theory have been developed since then. The most established model is the Principles and Parameters Theory, alternatively known as the P&P Model or the Theory of Government and Binding (the GB framework) (Chomsky 1981, 1982, 1986a, 1986b, 1991; Chomsky and Lasnik 1993). This was later developed into the Minimalist Program (MP) (Chomsky 1993, 1994, 1995, 2000, 2001a, 2001b) and the Strong Minimalist Thesis (SMT) (Chomsky and Berwick 2016; Chomsky 2022; Chomsky, et al 2023).

As an introduction to the contrastive analysis of Chinese and English syntax based on the generative framework, it would be too advanced to explore the relevant analysis under the MP or the SMT. Instead, this book starts with the P&P Model. Concepts and hypotheses from the MP and the SMT are also introduced whenever appropriate. The introduction of those concepts and hypotheses are logical (and natural) developments from the P&P Model and will not cause any confusion for readers without much background in generative syntax.

There is another theory-internal reason for this book to start with the P&P Model. The MP and the SMT are on-going research and they have not been accomplished as an established theory. The P&P Model, however, is theoretically complete. To understand the trend and future development of the MP and the SMT, a solid background in the P&P Model is required.

As the generative theory evolves, it is anticipated that any latest development within the generative enterprise is embraced in the book. To

accommodate beginners in syntax, i.e., intended readers of this book, and the theoretical advancement within the generative enterprise, the theoretical background of the book is located in-between the P&P Model and the MP and the SMT. In other words, although started with the P&P Model, a fair amount of transition to the MP and the SMT is also incorporated. This will facilitate for a progressive understanding of any future development of relevant theories within the generative enterprise.

2. The Contrastive Analysis Project

Contrastive analysis between Chinese and English has been an essential part for shedding light on second language acquisition. However, it has not been done systematically within modern linguistics.

There was a study prepared by the Contrastive Analysis Project (CAP) by the Department of Linguistics, University of Michigan, under a contract for the Defense Language Institute (DLI) in 1969. The result is an internal-circulated and non-peer reviewed manual used by the Defense Language Institute (DLI) in 1970s. It is entitled "A Contrastive Study of English and Mandarin Chinese." The contrastive analysis of Chinese and English syntax is embedded under Chapter 3 for sentence patterns, Chapter 4 for verb phrase and Chapter 5 for noun phrase. The manual is no longer used by DLI and available online (under Google search) as shared (and open) "public information."

The author of this book is not aware of any colleges or universities which are currently using the manual. The DLI CAP was finished when the generative grammar was at its preliminary stage. Therefore, it was not approached from the generative framework. It was predominantly the comparison of empirical facts between Chinese and English. The empirical data were massive and not theoretically categorized.

This book therefore serves as an empirical and theoretical advancement for the DLI CAP, in the domain of syntax.

3. Structure and synoposis

There are eight chapters in the book. Each chapter includes a short summary of major points and references for further reading. The chapters are arranged from the easiest syntactic topics gradually to the more complex and advanced ones. This step-by-step advancement of relevant topics can facilitate the reading process, especially for readers without much background knowledge in syntax.

Chapter 1 provides readers with basic knowledge in syntax. It starts with the structure of noun phases (NP) and the introduction of the X-bar Theory or the X-bar Schema as the generalized phase structure rule. The X-bar Schema is then extended to the structure of propositional phrases (PP), adjective phrases (AP) and (intransitive and transitive) verb phrases (VP). Concepts of arguments and theta roles in the verbal domain are introduced. The VP-internal Subject Hypothesis is discussed.

Chapter 2 compares the internal structure of noun phrases (NP) between Chinese and English. Certain functional categories in the nominal domain such as determiner phrase (DP), quantificational phrase (QuanP), number phrase (NumP) are introduced and discussed. This is followed by the discussion of determiner (D) and ordinal numbers, D and plurality and a comparison of classifiers (CL) with English measure words. Further differences between Chinese and English in terms of the noun (N) head, the complement (COMP) YP, the adjunct WP, the left versus the right branching of the adjunct WP in the nominal domain and the word order of adjunct WPs are discussed.

Chapter 3 revisits the structure of intransitive verbs and transitive verbs. A functional category within the VP domain is proposed to accommodate ditransitive verbs. The functional category is addressed as the light verb (*v*). The light verbs in Chinee are then discussed, followed by the discussion of the head parameter in the verbal domain between Chinese and English. The direction of the adjunct WP for both Chinese and English in the verbal domain is further described and the VP-internal Subject Hypothesis is maintained. The chapter ends with a discussion of the Thematic Hierarchy.

Chapter 4 defines the inflectional domain (traditionally for verb conjugation) as an independent projection of the inflectional head (INFL), termed as INFL-P (IP). The relevant technicality of *Agree* and the Extended Projection Principle (EPP) in the generative grammar are introduced and discussed. Auxiliaries and modal verbs are included in this chapter. Different ways of constructing *Aspect* in English and Chinese are discussed, covering topics such as auxiliary phrases (AuxP), aspect formation in Chinese, modal phrases (ModP) and the combination of ModP and AuxP. The X-bar Schema is further extended to the discourse-related domain with the introduction of the complementizer phrase (CP). The difference between the IP and CP is explicated.

Chapter 5 splits the IP into the agreement phrase (AgrP) and the tense phrase (TP) in English, and the aspect phrase (Asp-P) in Chinese. It compares Chinese and English in terms of subject-verb agreement, tense encoding and aspect formation.

Chapter 6 discusses question formation based on the structure of CPs. Yes-no questions are first introduced, subsuming topics such as the inversion of subject and English auxiliaries, modals, and the copular *be*. The functionality of *do*-support in English is included. This is followed by the comparison to yes-no questions in Chinese, which is derived by adding a sentence final particle *ma*. The formation of wh-questions in both Chinese and English are also introduced and compared. English is defined as a language with wh-movement, whereas Chinese is argued to be a wh-in-situ language with an optional sentence final particle *ne*. Because of the significance of sentence final particles in forming Chinese questions, the discourse related domain cannot be abbreviated without an elaboration of sentence final particles in Chinese. The sentence final particle *le* is then discussed. It is argued that there are at least four types of sentence final *le* in Chinese, namely the indicative *le*, the change of state *le*, the inchoative *le* and the imperative *le*. Other sentence final particles such as negotiative *ba* and feminine *ya* are also mentioned.

Chapter 7 discusses some peculiar sentence patterns in Chinese, in comparison with their possible English counterparts. These include the Serial Verb Construction (SVC), the *ba*-construction, the *bei*-construction, the topic-comment structure, A-not-A question, the *shi…de* construction and relativization.

Chapter 8 compares various elliptical constructions in Chinese and English, including NP ellipsis, the pro-drop parameter (subject deletion), the null object construction, VP ellipsis, sluicing (IP deletion), and the null complement anaphora (CP deletion).

The book ends with concluding remarks. It provides readers with further readings after finishing this book.

4. Readership

Contrastive analysis of Chinese and English language for sound patterns (phonology), word formation (morphology), sentence structure (syntax), and meaning (semantics, e.g., lexicalization) has been taught in most universities in the UK, the US, China and beyond. It is usually an upper division content course (at 300-400 level) serving CHIN-related minors and majors. With the addition of more MA programs around the globe over the last two decades, specialized in Teaching Chinese as a Foreign Language (TCFL), such a course is also added to the relevant MA curriculum (at 500-600 level). Nonetheless, there has been no single book that instructors or students can refer to in this field. Teaching and referential materials have to be compiled from journal papers, online writings and book chapters. This is

because the systematic comparison between Chinese and English language involves different sub-domains of linguistics, i.e., phonology, morphology, syntax and semantics. A unified account of all sub-domains seems to be impossible. This book provides the aforementioned readers one perspective to the contrastive analysis of Chinese and English syntax under the generative framework. General background knowledge in syntax is not required for this group.

This book is also for linguists who are interested in the study of comparative syntax between Chinese and English. This includes but not limited to (under-)graduate students in comparative linguistics, Chinese linguistics and theoretical linguistics. Instructors and researchers in those disciplines may also find the book beneficial. Readers with prior knowledge in syntax can scan and skim certain chapters.

5. References for English and Chinese syntax

Before contrastive analysis of Chinese and English syntax, there are countless references for the study of English syntax under the generative approach. Beginners can start with McCawley (1988), Fromkin (ed. 2000, Part II: 23-368), among many others. For references on the introduction to Chinese syntax, readers can refer to Sun (2006, chap. 7-8), Shei (2006, chap. 3 & 5), and Arcodia and Basciano (2021, chap. 6). Although reading of those books are not required, readers may find them supportive to the understanding of certain concepts and descriptions in this book.

CHAPTER 1

GENERALIZED PHRASE STRUCTURE RULES

Syntax emerges with the construction of phrases, which are the combination of words. Under the generative framework, formation of phrases is not random but rule governed. Common phases in most languages on the planet Earth will include but not limited to noun phrases, verb phrases, adjective phrases, adverb phrases and prepositional phrases. In this chapter, these basic phrases will be explored and based on that, a generalized phrase structure rule, i.e., the X-bar Theory or the X-bar Schema, will be adopted. This would be the basic rule or the fundamental building block to construct any syntactic objects. Readers with prior knowledge in generative grammar can skip this chapter.

1.1 Structure of noun phrases and beyond

A noun phrase (NP) can be constructed with a single noun (N), e.g., *faculty*. To capture this construction process, generative grammarians utilize rewrite rules, where "rewrite" can be interpreted as "constructed of." For example, under the scenario of *faculty* as an NP, the rewrite rule for the relevant NP, i.e., *faculty*, can be "NP → N." This rule, with the arrow "→" imbedded in it, can be read as "an NP is rewritten as (constructed of) an N."

To elaborate an NP, modifiers can be inserted, e.g., *hard-working faculty*. The modifier, i.e., the compound adjective word *hard-working* can function independently as an adjective phrase (AP). Subsequently, the NP rewrite rule for *hard-working faculty* is "NP → AP N." This is read as "an NP is rewritten as (constructed of) an AP and an N."

To cap an NP, an article, e.g., *a*, *an*, or *the*, can be conferred as in *a hard-working faculty*. In the generative literature, articles, i.e., *a/an/the* and demonstratives, e.g., *this/these*, *that/those*, are all categorized as determiners (Det.). Incorporating the Det. category into the NP structure rule, a complex NP such as *a hard-working faculty*, can have a rewrite rule of "NP → Det. AP N."

Furthermore, certain nouns in English, e.g., *students*, can select a complement, e.g., *students of linguistics*. The phrase *of linguistics* is a

prepositional phrase (PP), which defines the subject for *students* to study, i.e., *linguistics*. The NP rewrite rule for *students of linguistics* is then "NP → N PP." Additional PPs can be concatenated to the phrase, e.g., to specify a location as in *students of linguistics in China*: "NP → N PP PP."

The NP in (1) has subsumed everything, including a Det. "*the*," an AP modifier "*hard-working*," an N "*students*," a PP complement "*of linguistics*," and another PP "*in China*" that specifies the location.

(1)	the	hard-working	students	of linguistics	in China
	Det.	AP	N	PP	PP

The N is obligatory if an NP is to be constructed. All other peripheral elements in the NP, i.e., the Det., the AP and the two PPs can be optional. The complete NP rewrite rule for any NPs in English is generalized in (2), with parentheses indicating optionality.

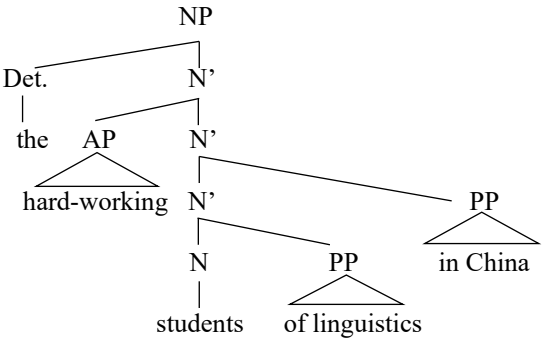
(2) NP → (Det.) (AP) N (PP) (PP)

The English NP rewrite rule (2) seems to be nothing more than the concatenation of Det. AP, N and PP. It is a linear empirical generalization for the structure of all possible English NPs. But this can be illusional, as the Det., AP, N and PP have different functions in the NP as illustrated in (1). They are not of the same equal status. For example, the N, which is to indicate the lexical category of nouns, determines that the entire complex phrase is ultimately an NP. Under the generative framework, it is defined as the head of the NP. The AP, however, is optional. It is a modifier, occupying a position that is not obligatory. That position is considered as an adjunct. The function of the Det. is to cap the NP, rendering a definite or indefinite interpretation for the relevant NP. The two remaining PPs also function differently with respect to the N head. The first PP, i.e., *of linguistics* specifies the subject that "students" are studying. It is a reminiscence of the object of the verb "to study," i.e., "students who study linguistics." Therefore, it is treated as the complement of the N head. The second PP, i.e., *in China*, is for additional information, i.e., to specify a location. Since this information is additional (and optional), it also functions as an adjunct for the NP.

To visualize the relationship among the aforementioned Det., AP, N and PP, generative grammarians utilize tree diagrams. Take the NP in (1), with a rule generalized in (2), for example. This can be schematized in (3). The N head in (3) projects upward. As an N head, it guarantees that the maximal projection of its head N is an NP, not an AP, PP or something else. All other

intermediate projections between the N head and the maximal projection NP are defined as the N-bar levels, notated as N'. The first N' from the N head is the first branching node. It indicates that the N head has selected a PP, i.e., *of linguistics* as its complement. The triangle below the PP means that there is more structure within the PP. But for brevity and simplicity when discussing the structure of NPs, the inner structure of the PP is omitted. This structure abbreviation is also applied to the second PP, i.e., *in China* and the AP, i.e., *hard-working*. Both are attached to the upper N' positions. Unlike the first complement PP, i.e., *of linguistics*, the second PP *in China* and the AP *hard-working*, are optional adjuncts. More N-bars can be inserted if more optional modifiers are added, as in "the *magnificent* hard-working students of linguistics in China." This has revealed the recursive nature of the intermediate N'-s. However, once a Det., e.g., *the*, is merged with the topmost N', the projection is frozen. It means that the projection of the N head, i.e., an NP, has reached its maximality. An NP with its own integrity has been constructed and nothing else can be further merged with the NP.

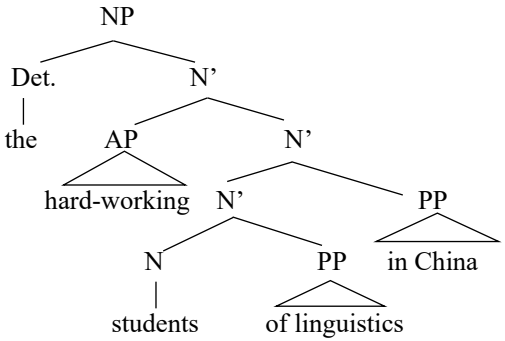
(3)



The tree diagram in (3) is sketched vertically, i.e., from the N to the recursive N' to the NP, with the Det., AP, and PP hanging on either side of the vertical column or the tree trunk. This is for a straightforward visualization of the projection from an N head to an NP, and to understand intuitively how an NP is formed and structured. When syntacticians draw tree diagrams, most of them will adopt an aesthetic approach and draw tree diagrams differently. It is not vertical, but slanted. This is demonstrated in (4), a revised tree diagram for (3). The revised version does not change anything. The N head still projects into an NP. The first PP, i.e., *of linguistics* is still a complement of the N head. The second PP *in China* and the AP *hard-working* remain as adjuncts merged to the upper N-bars. The

Det. *the* still concludes the NP. Because of its aesthetic value, this style of drawing tree diagrams will be adopted in this book for any further syntactic analysis.

(4)



1.2 The X-bar Theory

The structure of English NPs has been generalized and diagramed in (4). Assume the structure of English NPs (4) can be reduplicated in all other lexical categories, i.e., categories with substantial meanings, such as prepositions (P), adjectives (A) and verbs (V). A more generalized schema can be achieved. Instead of individually writing N, A, V and P, a variable symbol, i.e., "X," is borrowed by generative syntacticians to represent all aforementioned lexical categories.

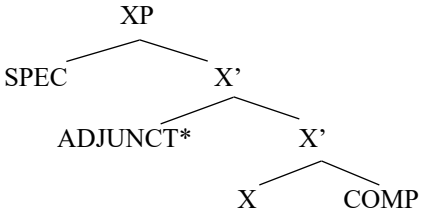
Assume that X is a lexical head. Following the NP structure in (4), it can be stipulated that the head X can also select a complement (COMP) in its first X' position. When X further projects, it also generates multiple (recursive) X' adjunct positions. Adjuncts (ADJUNCT) can be merged either to the left or to the right of the X' as demonstrated in the two N' adjuncts in (4), i.e., the AP *hard-working* to the left of the N' and the PP *in China* to the right of the N'.

Although it is an important issue in the X' Schema, the directionality of adjuncts is not under consideration in this chapter. The directionality of merge, i.e., left branching versus right branching of adjuncts, will be further discussed in Chapter 3. For clarity and convenience, assume that adjuncts are always adjoined to the left of N' at the moment. A star "*" can then be attached to the right of ADJUNCT, indicating that it can be reiterated, i.e., for being recursive (5).

Finally, a specifier (SPEC) like the Det. *a/an/the* in English NPs, is merged to the topmost X'. This terminates the projection of the X head, and

ultimately generates an X phase (XP). This whole process for the X head to project is schematized in (5).

(5)

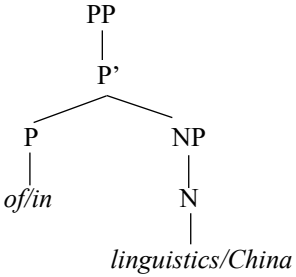


This is the skeleton of the renowned X-bar Theory (or the X-bar Schema) in the generative literature. If all assumptions are on the right track, the diagram in (5) is a more generalized phrase structure. Assume that X can stand for N, P, A, and V. It is demonstrated in the upcoming subsections how the structure as portrayed in (5) can be further applied to P, A, and V, respectively. In later chapters, the X-bar Schema in (5) is further extended to other lexical, and non-lexical (or functional) categories.

1.3 Structure of prepositional phrases

Two PP examples have already been provided in (1), i.e., *of linguistics* and *in China*. Although their functions in the phrase *the hard-working students of linguistics in China* is different, with one, i.e., *of linguistics*, being the COMP and the other one, i.e., *in China*, being the ADJUNCT, they both have identical syntactic structures. By following the X-bar Schema in (5), their structure can be diagramed in (6), which is essentially the visual effect of the English PP structure rule, i.e., "PP → P NP."

(6)



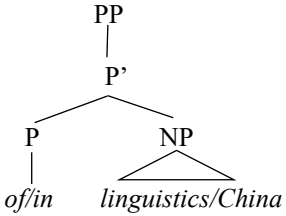
A tradition in syntax is not to draw anything that is not visible or audible in the phase, for both clarity and brevity. For example, within the NP, i.e.,

linguistics and *China*, since there are no COMPs, ADJUNCTs or SPECs for *linguistics* and *China*, only a vertical dominating line is drawn, without further branching. The interpretation is that the N head projects directly to NP. Similarly, for the PP *of linguistics* and *in China*, since there are no ADJUNCTs and SPECs, they are missing in the tree diagram (6). What is visible is that the P head *of/in* selects an NP *linguistics/China* as its COMP. When merged, only the first bar level, i.e., P' is generated, which then projects to PP directly without further branching.

Besides clarity and brevity, this omission technique is also for economy considerations when drawing tree diagrams. Although the tree diagrams seem to be incomplete based on the X-bar Schema, all potential positions, i.e., SPECs, ADJUNCTs and COMPs, should be considered as "having been generated." They are not drawn only when they are not occupied, e.g., by an audible word or phrase.

Furthermore, when analyzing the structure of PPs, the inner structure of the two NPs, i.e., *linguistics* and *China*, is irrelevant. The triangle abbreviation technique as demonstrated in (3) and (4) can be utilized for brevity and simplicity, as in (7).

(7)

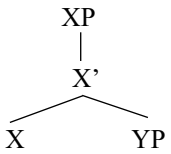


If P is replaced with an X, a simplified version of the X-bar Theory is revealed. This is the one without ADJUNCTs and SPECs as diagramed in (8). Following the variable notation for X, another variable Y can be borrowed to occupy the COMP position. According to the X-bar Schema, the variable Y, if inherited as a head, can maximally project to YP. When COMP is indicated by a variable YP, a more abstract version of the X-bar Theory is achieved in (8).

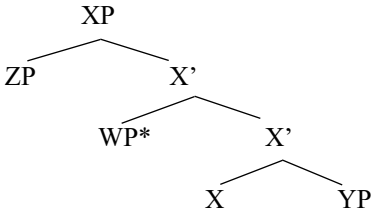
If the ADJUNCT and SPEC positions are restored in (8), it is the regular X-bar Schema as diagramed in (5) with a variable YP substituting for the COMP. Assume two more variables, i.e., W and Z, with their maximal projections WP and ZP, respectively. Further assume that WP occupies the (recursive) ADJUNCT position and ZP occupies the SPEC position. An ultimate abstract and generalized version of the X-bar Theory, or the X-bar Schema, is delineated in (9). This version of the X-bar Schema will be

referred to for the rest of the book for simplicity. The four variables, e.g., X, Y, W and Z, can be substantialized by any lexical or non-lexical categories when needed, with X defined as the head, YP as the COMP, WP as the ADJUNCT and ZP as the SPEC.

(8)



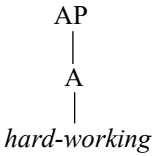
(9)



1.4 Structure of adjective phrases

If an AP has only one adjective, e.g., *hard-working* in (1), following the latest version of the X-bar Schema in (9), X is realized as A, which is projected to AP without a COMP YP, ADJUNCT WP and SPEC ZP. The tree diagram is similar to the NP structure for *linguistics* and *China*, with label change only, i.e., from N to A. This is diagramed in (10), which represents the English AP structure rule, i.e., "AP → A."

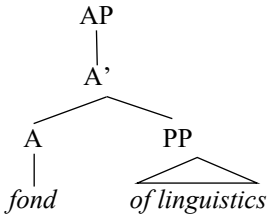
(10)



The diagram in (10) cannot generalize all structures for APs in English, as certain adjectives in English, e.g., *fond*, can select an object as in *fond of linguistics*. Under this scenario, the COMP YP is merged, which is realized as a PP, i.e., *of linguistics*. In other words, the value of the variable Y is substantialized as P for a preposition. The head A projects as required by the X-bar Schema. Without any ADJUNCTs, all intermediate A-bar (A') levels are omitted. The structure resembles that in (8), as diagramed in (11).

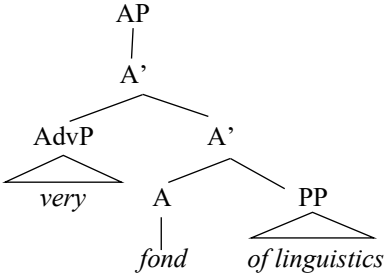
Since the emphasis is on the structure of APs, the inner structure for the COMP PP *of linguistics* is abbreviated under a triangle. What (11) portrays is a refined AP structure rule for English, i.e., "AP → A PP." Combining (10) and (11), a more generalized AP structure rule for English, i.e., "AP → A (PP)," can be formalized, indicating that the COMP PP can be optional for English APs.

(11)



Being an adjective, *fond* can also be modified by an adverb (Adv) such as *deeply*, indicating the degree of *fondness* as in *deeply fond of linguistics*. Following the X-bar Schema, the head Adv projects into an adverb phrase (AdvP). This is one instantiation of the ADJUNCT WP in (9) and the value of the variable W is substantialized as Adv. If nothing else is merged, the AP *very fond of linguistics* will be structured in (12), with the SPEC ZP unsaturated.

(12)



1.5 Structure of verb phrases

Verbs can be intransitive with zero objects, e.g., *smile*. They can also be transitive with only one object as in *study math*, or ditransitive with two objects as in *give me a book*. In this subsection, only intransitive and transitive verbs will be discussed. Ditransitive verbs will be discussed in Chapter 3.

1.5.1 Intransitive verbs

To completely appreciate the structure of a verb phrase (VP) that is intransitive, the Theta Theory from the generative framework needs to incorporated into the current discussion.

1.5.1.1 Arguments and theta roles

For generative grammarians, the term argument is utilized to classify verbs. This is related to the concept of grammatical valency, i.e., how many arguments (participants) a verb can take in human languages. In the generative literature, this is also addressed as n-place predicate or n-ary predicate. Take the intransitive verb *smile* for example. In the sentence "*I smiled*.", there is only one argument, i.e., *I*. Therefore, it is a 1-place predicate. For transitive verbs such as *study* as in "*I studied math*.", there are two arguments, i.e., *I* and *math*. Hence, it is defined as a 2-place predicate. For ditransitive verbs such as *give* as in "*I gave John a book*.", there are three arguments, i.e., *I*, *John* and *a book*. It is then defined as a 3-place predicate.

It seems that four arguments are maximal in English for a verb to accept, e.g., *bet* as in "*I bet you three hundred dollars that John will not join us*." The four arguments are *I*, *you*, *three hundred dollars* and *that John will not join us*. In terms of grammatical valency, it is a 4-place predicate, or a tetravalent verb.

For all aforementioned English examples, the first-person pronoun, i.e., *I*, is the subject of all sentences and it is always located outside the main predicate. This is defined as the external argument for the relevant V in the generative literature. By contrast, arguments such as *math* in *I studies math*, and *John* and *a book* as in *I gave John a book* are addressed as the internal arguments of the relevant V (predicate).

Based on these concepts, the Theta Theory from the generative framework can be introduced. Take a 1-place predicate, e.g., an intransitive verb *smile* for example. If *I smiled*, it means that I performed an action of smiling. In other words, as far as smiling is concerned, I was the doer or the initiator. It is defined under the generative framework that the intransitive verb *smile* has an *Agent* theta role that needs to be assigned or discharged.

The term "theta" or "θ" is a letter that generative grammarians have borrowed from Greek to mark a variable. Therefore, theta roles or θ-roles, mean nothing more than various roles that can be generalized under one variable letter, i.e., theta θ. For an intransitive verb like *smile*, the theta role, for example, is instantiated as Agent.

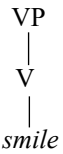
Since *smile* has only one Agent theta role to be assigned, it needs only one argument to assume the role (hence, a 1-place predicate). There seems to a one-to-one correspondence between theta roles and arguments. That is, each theta role of a verb must be assigned to an argument and each argument must receive one theta role. This is the fundamental concept of the Theta Theory or the Theta Criterion.

The reason to incorporate the Theta Theory into a VP structure is because in syntactic analysis, various structures of VP will be analyzed within the theta domain, in which all theta roles of the V are discharged. It is the locus where lexical semantics interfaced with syntactic structures. This will be further discussed below and in Chapter 3.

1.5.1.2 Intransitive VP structure under the X-bar Theory

Following the X-bar Schema, the phrasal structure for an intransitive, e.g., *smile*, is identical to an AP structure as sketched in (10). The only difference is that the X head is switched from A to V, and the maximal projection is VP, not AP, as indicated in (13). The past tense marked with *–ed* for *smile* as in *I smiled*, and for all other examples in this chapter, is ignored at the moment. It will be further discussed in Chapter 4 and 5.

(13)

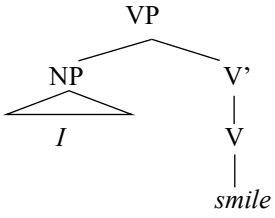


Because *smile* is intransitive, the COMP YP is omitted. However, *smile* has an Agent theta role that is assigned to an external argument *I*, as in *I smiled*. This used to be mapped into an argument structure which is then projected or linked to the deep syntactic structure. For example, the external argument of *smiled*, i.e., *I*, is described as occupying a higher or outer position in the argument structure within lexical semantics. This external argument *I* is simultaneously linked to an N syntactic category, which is then X-bar Schematized as NP in the deep syntactic structure. Through various transformation rules, the deep syntactic structure is ultimately transformed into the surface syntactic structure as diagramed in (13).

All these intermediate steps of semantics-to-syntax transition, or mapping, have been eliminated in the later development of syntactic theory. Current syntactians have imbedded the Theta Theory directly within the VP structure. For example, the COMP YP position is for hosting the internal

argument of a verb and the SPEC ZP is considered as the position for an external argument of the verb. The argument structure that used to be a concept within lexical semantics is now syntactic in nature. It has been collapsed with the VP structure. Take the verb *smile* for example. The argument structure of *smile* is encoded directly within the VP structure as demonstrated in (14) for *I smiled*, with an external argument *I* and no internal arguments. The external argument *I* is syntactically saturated as an NP. There are no more linking rules to relate arguments with syntactic categories, and there is no need for various deep to surface transformations. Under this approach, the VP structure also encodes the argument structure.

(14)

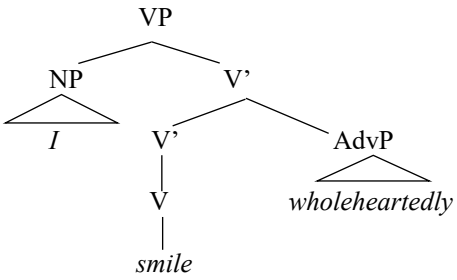


With the syntactic establishment of (14), an adjunct, e.g., an adverb modifier such as *wholeheartedly*, can be further merged to the VP structure as demonstrated in (15), in line with the X-bar Schema (9). The COMP YP position has remained empty. The SPEC ZP position is saturated with an NP and the ADJUNCT WP position is occupied with an AdvP that branches to the right.

1.5.1.3 VP-internal Subject Hypothesis

The external argument, i.e., *I*, has a dual role in *I smiled wholeheartedly*. It is not only assigned with the Agent theta role for the verb *smile*, but also functions as the grammatical *subject* for the sentence. The syntactic position for the subject of a sentence is higher than the SPEC of VP ([SPEC, VP]). This will be elaborated in Chapter 5. It will be revealed by then that the Subject *I* is base-generated at [SPEC, VP]. It is then raised from the position of [SPEC, VP] to a higher position to assume its syntactic role, i.e., as the subject for the entire sentence. This base-generation of the sentence subject at the position of [SPEC, VP], which is within VP, is known as the VP-internal Subject Hypothesis. The earliest arguments for this can be found in Kukui and Speas (1986) and Kitagawa (1986).

(15)



The label for the external argument (and the subject), i.e., *I*, is an NP (and for other noun phrases in this chapter). This is for illustration purpose only. More refined structure for NPs will be introduced in Chapter 2.

1.5.2 Transitive verbs

Unlike intransitive verbs, transitive verbs, e.g., *study*, are 2-place predicates. Compared with intransitive verbs, they have an additional internal argument besides an external one.

1.5.2.1 Theta roles for transitive verbs and beyond

Similar to an intransitive verb, e.g., *smile*, a transitive verb, e.g., *study*, also needs to discharge an Agent theta role. Unlike intransitive verbs such as *smile*, however, a transitive verb, e.g., *study*, also has to select something else, i.e., an *object*, for the Agent to study, which is *math* in the example "*I studied math*." The NP *math* is the receiver of the action, i.e., to *study*, which is initiated by the Agent, i.e., *I*. For clarity, the past tense marker *-ed* is ignored. It will be further discussed in Chapter 4 and 5.

In the literature, the *affectee* of an action bears either the Patient or the Theme theta role. Both refer to the affected objects of transitive verbs. Patient is the receiver of the action as "math" in "*I studied math*," whereas Theme refers to the object that undergoes a change of state, e.g., a change of location or movement, as *the meal* in "*I brought the meal*." *The meal* bears the Theme theta role.

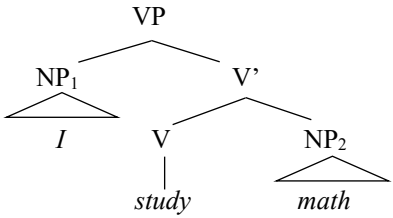
Focusing on the transitive verb *study*, it has two theta roles that need to be assigned to two arguments, following the Theta Criterion. The Agent role is typically assigned to an external argument and the Patient is discharged to an internal argument. In "*I studied math*.", the external argument *I* bears the Agent theta role and the internal argument *math* is assigned with a Patient theta role.

There are many other theta roles for an *n*-place predicate. Be it intransitive, transitive, ditransitive or tetravalent. These theta roles include but not limited to Experiencer, Instrument, Goal, Recipient, Source, Location, and Beneficiary. They will be further discussed in upcoming chapters when they become relevant.

1.5.2.2 Transitive VP structure under the X-bar Theory

Following the VP structure for intransitive verbs in (14), the syntactic structure for a transitive verb can be straightforward. The only extra step is to instantiate the COMP YP as another NP. Take "*I studied math*," for example. The VP structure for the transitive verb *study* is diagramed in (16).

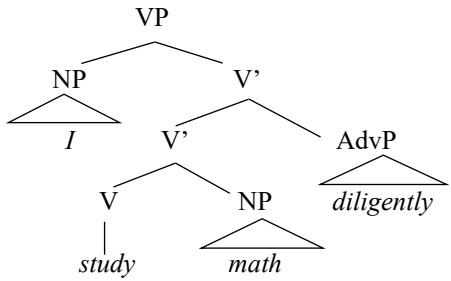
(16)



The structure in (16) implies a semantic interpretation for a transitive verb, i.e., *study,* with respect to its theta role assignments. To illustrate, numeral subscripts are added on NPs, i.e., NP_1 and NP_2. As a transitive verb, *study* is a 2-place predicate with two theta roles that need to be discharged. The internal Patient theta role is discharges to NP_2, i.e., *math* as the COMP to the V head. The external Agent is assigned to NP_1, i.e., *I*, as the SPEC of VP. Theta Criterion is met.

An adjunct can be further inserted to complete the diagram of an X-bar Schema in terms of transitive verbs. For example, a manner adverb such as *diligently* can be added to the VP structure in (16). This is diagramed in (17), which is a perfect manifestation of the X-bar Theory (cf. (9)). The only difference is that the ADJUNCT WP, which is instantiated as the AdvP *diligently*, is flipped to the right whereas in (9), it is left-branched.

(17)



1.6 Sum-up

In this chapter, the X-bar Schema has been introduced, which is considered as the generalized structure for all phrases. It has been applied to lexical categories such as N, P, A, and V that is (in)transitive. In Chapter 3, ditransitive V, e.g., *give*, will also be accommodated by the X-bar Schema. It will be employed henceforth to analyze any possible syntactic structures and considered as the core building block for syntax.

1.7 Further references

For a general introduction to generative syntax, see Haegeman (1994); Culicover (1997); Carnie (2002); Lasnik, Uriagereka and Boeckx (2005).

CHAPTER 2

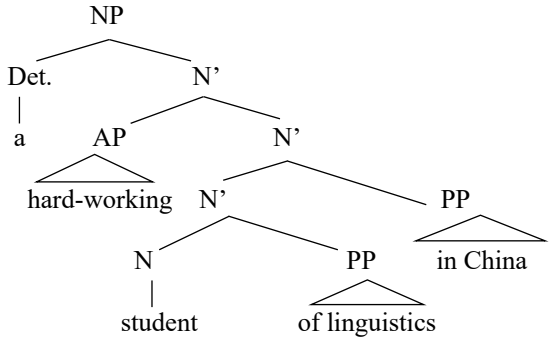
REFINED STRUCTURE OF NOUN PHRASES

The X-bar Theory is a generalized phrase structure rule (PS-rule) intended for all human languages. In this chapter, the X-bar Schema is applied to certain non-lexical or functional categories within the nominal domain in English. These categories are defined as "functional" because they are more related to grammatical relations within an NP. Comparison with the structure of Chinese NPs will be provided whenever applicable. Based on the empirical data drawn from both English and Chinese, a more refined structure for NPs will be articulated.

2.1 What can X refer to?

Within the X-bar Schema, X is defined as a variable. The value for this variable can be any lexical categories such as N, P, A, and V. Based on the X-bar Schema, a comprehensive structure for a fully-fledged English NP such as *a hard-working student of linguistics in China* is articulated in Chapter 1, diagram (4), repeated below as (1).

(1)



The X-bar Schema has been applied multiple times in (1), i.e., to N, P and A, respectively, though the inner structure for the relevant AP and PP has been abbreviated under triangles (For detailed articulation of the inner