國科會專題研究計畫成果報告撰寫格式

99 年 5 月 5 日本會第 304 次學術會報修正通過

一、說明

國科會基於學術公開之立場，鼓勵一般專題研究計畫主持人發表其研究成果，但主持人對於研究成果之內容應負完全責任。計畫內容及研究成果如涉及專利或其他智慧財產權、違異現行醫藥衛生規範、影響公序良俗或政治社會安定等顧慮者，應事先通知國科會不宜將所繳交之成果報告蒐錄於學門成果報告彙編或公開查詢，以免造成無謂之困擾。另外，各學門在製作成果報告彙編時，將直接使用主持人提供的成果報告，因此主持人在繳交報告之前，應對內容詳細校對，以確定其正確性。

本格式說明之目的為統一成果報告之格式，精簡報告內容之篇幅以 4 至 10 頁為原則，完整報告內容之篇幅不得少於 10 頁。

成果報告繳交之期限及種類（精簡報告、完整報告、期中精簡報告、期中完整報告等），應依本會補助專題研究計畫作業要點及專題研究計畫經費核定清單之規定辦理。

二、報告格式：依序為封面、目錄（精簡報告得省略）、中英文摘要及關鍵詞、報告內容、參考文獻、計畫成果自評、可供推廣之研發成果資料表、附錄。

(一)報告封面：請至本會網站（http：//www.nsc.gov.tw）線上製作（格式如附件一）。

(二)中、英文摘要及關鍵詞 (keywords)。

(三)報告內容：包括前言、研究目的、文獻探討、研究方法、結果與討論（含結論與建議）…等。

(四)計畫成果自評部分：請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值(簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性)、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估，並請至本會網站線上製作。（格式如附件二）

(五)頁碼編寫：請對摘要及目錄部分用羅馬字Ⅰ、II、 III……標在每頁下方中央；報告內容至附錄部分請以阿拉伯數字 1.2.3.……順序標在每頁下方中央。

(六)附表及附圖可列在文中或參考文獻之後，各表、圖請說明內容。

(七)可供推廣之研發成果資料表：

1.研究計畫所產生之研發成果，應至國科會科技研發成果資訊系統（STRIKE 系統，https://nscnt66.nsc.gov.tw/strike/）填列研發成果資料表（如附件三），循執行機構行政程序，由研發成果推廣單位（如技轉中心）線上繳交送出。

2.每項研發成果填寫一份。

(八)若該計畫已有論文發表者(須於論文致謝部分註明補助計畫編號)，得作為成果報告內容或附錄，並請註明發表刊物名稱、卷期及出版日期。若有與執行本計畫相關之著作、專利、技術報告、或學生畢業論文等，請在參考文獻內註明之。

三、計畫中獲補助國外或大陸地區差旅費、出席國際學術會議差旅費或國際合作研究計畫差旅費者，須依規定分別撰寫心得報告，並至本會網站線上繳交電子檔，心得報告格式如附件四、五、六。

四、報告編排注意事項

(一)版面設定：A4 紙，即長 29.7 公分，寬 21 公分。

(二)格式：中文打字規格為每行繕打（行間不另留間距），英文打字規格為 Single Space。

(三)字體：以中英文撰寫均可。英文使用 Times New Roman Font，中文使用標楷體，字體大小以 12 號為主。

附件一

行政院國家科學委員會補助專題研究計畫 □√成果報告 □期中進度報告

形式語意學及漢語句子的語意分析

計畫類別：□√個別型計畫　□整合型計畫
計畫編號：NSC97－2410－H009－039－MY3－
執行期間： 99 年 8 月 1 日至 100 年 7 月 31 日

執行機構及系所：國立交通大學外國語文學系

計畫主持人：林若望
共同主持人：
計畫參與人員：楊馨瑜

成果報告類型(依經費核定清單規定繳交)：□精簡報告　□√完整報告

本計畫除繳交成果報告外，另須繳交以下出國心得報告：
□赴國外出差或研習心得報告
□赴大陸地區出差或研習心得報告
□√出席國際學術會議心得報告
□國際合作研究計畫國外研究報告

處理方式：除列管計畫及下列情形者外，得立即公開查詢
□涉及專利或其他智慧財產權，□一年□二年後可公開查詢

中　華　民　國 100 年 10 月 16 日

附件二

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估
   - □ √達成目標
   - □ 未達成目標（請說明，以 100 字為限）
     - □ 實驗失敗
     - □ 因故實驗中斷
     - □ 其他原因

   說明：計畫研究內容部分已經出版達成目標，另外部分尚在持續撰寫中。

2. 研究成果在學術期刊發表或申請專利等情形：

   論文：□√已發表 □未發表之文稿 □撰寫中 □無

   專利：□已獲得 □申請中 □無

   技轉：□已技轉 □洽談中 □無

   其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以500字為限）

本研究計畫針對漢語多種不同句型及議題做深入的語意分析，並針對邏輯語意學在漢語裡的運用做深入淺出的介紹，預計日後出版一本推廣漢語邏輯語意學分析的專書，其內容撰寫已經完成許多章節，但需要更多的課堂實驗來完備修訂內容，這部分會繼續進行，此一形式語意學分析專書預期對於日後想踏入形式語意學分析的學者或是學生將會是一大協處，因為本書不僅著眼於形式工具之介紹，更把實際分析運用在漢語上面。除此之外，在計劃期間，我們也完成了一些漢漢語時間解釋以及時量詞組的句法語意分析，並且已經出版或排版中，其內容日後也會納入專書裡面，在計劃期間已經出版的三篇論文如下:

1. Lin, Jo-wang (in press) "Tenselessness", in Robert Binnick (ed.) Oxford Handbook in Linguistics: Tense and Aspect.
2. Lin, Jo-wang (2011) "Chinese Durative and Completive NPs as Polarity Items", In Jung-hsing Chang and Jenny Yichun Kuo (eds.) Language and cognition: Festschrift in honor of James H-Y. Tai on his 70th birthday.: The Crane Publishing, Taipei.
3. Lin, Jo-wang (2010) "A Tenseless Analysis of Mandarin Chinese Revisited: A Response to Sybesma (2007)", Linguistic Inquiry 41(2): 305-329.

這三篇論文中的兩篇對於漢語時間解釋的手段與方法做了非常仔細的描寫與深入淺出的介紹，在理論上有其獨創性，自成一格，是日後要入門漢語時間解釋的學者不可或缺的參考文獻。另一篇論文則是有關完成時量與持續時量的語序解釋，我們分析了一個前人都未深入討論的問題，也就是，為什麼完成時量一定要出現在動詞前面，但持續時量卻一定要出現在動詞後面，這個研究是文獻上首次針對動前與動後時量詞組詞序對比問題提出理論性的解釋，我們把時量詞組分析成極性詞組，提出了完成時量詞組與持續時量詞組是不同類型的極項詞組的觀點，並利用極性詞組的認可條件方法來解釋時量詞組的詞序，這個全新的解釋方式，相信對時量詞組的詞序問題會有重要的影響。

形式語意學及漢語句子的語意分析 3/3

計畫編號：NSC 97-2411-H-039-MY3
執行期限：99 年 8 月 1 日至 100 年 7 月 31 日
主持人：林若望　國立交通大學外文系

一、中文摘要

本研究計畫的第三年持續針對一些漢語的部分句型及時間解釋作研究，作為漢語語句子語意分析專書的部分內容，其中主要分析的課題為漢語的時間解釋機制以及動前與動後時量詞組的詞序問題，除此之外，則是繼續編輯修訂漢語句子的形式語意分析教材並實際用於課程教學，從中獲得回饋，作為修訂參考除此外。

關鍵詞: 邏輯語意學、形式語意分析

Abstract

The main task of the third year project is to continue doing researches on some particular issues such as temporal interpretations and the word order problem of durative and completive phrases. In addition, we also continued editing and revising some teaching materials for Chinese formal semantics and uses them in the actual teaching. The feedbacks we got from the classroom discussions have been incorporated into the book project on formal semantic analysis of Chinese sentences that we are still writing.

二、緣由與目的

在西方的學術發展史上，邏輯學和語言學各自都有悠久的歷史和傳統，50年代 Noam Chomsky 在他的語言學研究中，使用了邏輯演繹方法，使得邏輯學與語言學（或是句法學）結合在一起。60 年代末，70 年代初，邏輯學家 Richard Montague 則進一步採用邏輯語意學的方法來處理自然語言的語意解釋，並建立 了自然語言句法範疇和邏輯類型的對應關係，替今日形式語意學的發展奠立了 牢不可破的基礎。早期語意學還沒發展起來時，語言學家們認為沒有語意學也 可以談論句法學，Chomsky 甚而主張句法研究是一個自足的學科，可以獨立於 其他的語言學研究，然而 Montague 卻說『如果沒有語意學作為其後續理論， 句法本身沒什麼意義。』從 Montague 的評論裡，我們可以清楚地看出語意學的研究對於整個語法研究，特別是句法-語意的接口研究，所扮演的地位。Richard Montague 及後續 Barbara H. Partee 所推展的形式語意學今日已是美國語言學界的主流研究之一，研究的人越來越多，研究課題越來越廣，影響也越來越大。這一個趨勢可從這些年來美國各大學語言學系的發展中看出端倪。根據 Partee (2004)書中的陳述，在二十世紀 60 年代，形式語意學幾乎乏人問津，知名的語言學系至多也只有一名語意學家，但是到了 90 年代一個語言學系已經常常有二 至三名語意學家，語意學在許多語言學系裡已成為與句法學、音韻學並駕齊驅的核心研究學科，想讓人不去重視都不行。因此對漢語的語意學做研究和推廣也是勢在必行的趨勢，本研究計畫的主要目的就在於撰寫一本可用余自學或是教學使用的形式語意學教材。

三、結果與討論

我們第三年的主要工作是持續針對一些漢語的部分句型及時間解釋作研究，作為漢語語句子語意分析專書的部分內容，其中主要分析的課題為漢語的時間解釋機制以及動前與動後時量詞組的詞序問題。2010年出版在 Linguistic Inquiry 的文章『A tenseless analysis of Mandarin Chinese revisited: a response to Sybesma (2007)』是針對 2006 年有關漢語是否有句法時制這個議題，更進一步地提出許多句法及語意上的證據來支持漢語是無時制語言，並對 Sybesma (2007)的時制分析方法的每個證據提出反證，研究結果刊登在語語理論最著名的期刊 Linguistic Inquiry‘，可見研究論點有其道理。另外，即將出版在由 Robert Binnick 主編的新書 “Tenselessness”, in Robert Binnick (ed.) Oxford Handbook in Linguistics: Tense and Aspect，則是非常深入淺出的，在描述中帶出理論，在比較中凸顯論點的方式來介紹世界上的無時制語言的運作方式，特別是中文的運作理論，這篇文章也算是把過去十年本人在中文時間裡論的研究上下了一個總結，研究成果非常適合納入形式語意分析專書的章節裡。最後一篇以經出版的論文則是有關動前與動後時量詞組的詞序問題，我們將此詞序問題歸之於不同級項詞組的認可方式，這是一個非常創新的想法，文獻上並未提及過，但肯定會對時量詞組的句法與語意產生影響。除此之外，我們也將已經撰寫之部分語意分析教材運用於實際教學並從中獲得回饋修訂原先撰寫之內容，此部分請參考附件。

四、 計畫成果自評

本年度研究計畫針對漢語多種不同句型及議題做深入的語意分析，並針對邏輯語意學在漢語裡的運用做深入淺出的介紹，預計日後能根據所撰寫的內容進行進一步教學實驗，希望修訂後藤出版一本推廣漢語邏輯語意學分析的專書，其內容撰寫雖然尚未完全結束，但已經完成許多章節，此一形式語意學分析專書一但全部完成，對於日後想踏入形式語意學分析的學者或是學生將會是一大協處，因為本書不僅著眼於形式工具之介紹，更把實際分析運用在漢語上面。除此之外。在計劃期間，我們也完成了一些漢漢語時間解釋以及時量詞組的語意分析，其內容也非常適合納入形式語意學分析介紹裡，所以日後也會將內容以中文撰寫，納入專。我們在計劃期間已經出版的三篇論文如下:

1. Lin, Jo-wang (in press) “Tenselessness”, in Robert Binnick (ed.) Oxford Handbook in Linguistics: Tense and Aspect.
2. Lin, Jo-wang (2011) “Chinese Durative and Completive NPs as Polarity Items”, In Jung-hsing Chang and Jenny Yichun Kuo (eds.) Language and cognition: Festschrift in honor of James H-Y. Tai on his 70th birthday.: The Crane Publishing, Taipei.
3. Lin, Jo-wang (2010) “A Tenseless Analysis of Mandarin Chinese Revisited: A Response to Sybesma (2007)”, Linguistic Inquiry 41(2): 305-329.

這三篇論文中的兩篇對於漢語時間解釋的手段與方法做了非常仔細的描寫與深入淺出的介紹，在理論上有其獨創性，自成一格，是日後要入門漢語時間解釋的學者不可或缺的參考文獻。另一篇論文則是有關完成時量與持續時量的語序解釋，我們分析了一個前人都未深入討論的問題，也就是，為什麼完成時量一定要出現在動詞前面，但持續時量卻一定要出現在動詞後面，這個研究是文獻上首次針對動前與動後時量詞組詞序對比問題提出理論性解釋，我們把時量詞組分析成極性詞組，提出了完成時量詞組與持續時量詞組是不同類型的極項詞組的觀點，並利用極性詞組

的認可條件方法來解釋時量詞組的詞序，這個全新的解釋方式，相信對時量詞組的詞序問題會有重要的影響。

五、參考文獻

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第一章

集合與函數

語言學理論，特別是形式語意學理論，使用了許多數學中的概念來解釋自然語言的運作，其中又以集合及函數的概念運用得最廣泛，是語意學理論的必學概念，在這一章，我們先來介紹這兩個概念。

1. 集合理論

1.1 基本概念

簡單地說，所謂集合就是一組東西放在一起，形成一個整體，集合裏的每一個東西叫做元素。要表示集合的最基本方式是用兩個小括弧來列舉集合中的元素，比如：

（1）{a, b, c} = 包含了a, b, c三個元素的集合

集合和元素間有隸屬關係，如果一個元素a在集合A內，稱為a屬於A，記做‘a∈A’或說A包含a。如果a不是一個集合的元素，則記做 ‘a∉A’。集合的元素也可以是另一個集合，所以在（2a）中的集合共有四個元素，其中一個元素是集合。（2b）中的集合只有一個元素，這個元素本身也是一個集合。

（2）a. {a, b, c, {d, e, f}} =包含了a, b, c, {d, e, f} 四個元素的集合
　　b. {{a,b,c}} =包含了 {a, b, c} 一個元素的集合

集合中的元素，擺放的先後次序不重要，所以下面的集合都代表同一個集合，這個特性稱之為集合的無序性。

（3）{a,b,c} = {a,c,b} = {b,a,c} = {b,c,a} = {c,a,b} = {c,b,a}

又集合不一定都包含元素，一個集合若沒有任何元素，這個集合就叫做空集合，有時記做‘∅’。

1.2 集合與集合間的關係

兩個集合間有可能有共同的元素，或是一個集合的元素完全包含在另一個集合的元素裡，或是完全沒有共同的元素。舉例如下：

（4）集合間有共同元素的集合
　　{a, b, c}；{c, d, e}
（5）一個集合的元素完全包含在另一個集合的元素的集合
　　{a, b, c}；{a, b, c, d, e}
（6）完全沒有共同元素的集合
　　{a, b, c}；{d, e, f}

當一個集合A的元素完全被包含在另一個集合B的元素裏時，我們稱A集合為B集合的子集合（subset），記做‘A⊆B’（或是‘B⊇A’，B為母集合(superset)）。此時，如果子集合A不等於B集合時，我們稱集合A為集合B的完全子集合（proper subset），記做‘A⊂B’，如例（7）。

（7）集合A：　{a, b, c}
　　集合B：　{a, b, c, d}

另外，如果A是B的子集合，B也是A的子集合的話，那就表示這是兩個相等的集合，所以對於任一集合A，A⊆A而且A⊇A。

當集合A和集合B有共同元素時，我們用交集符號‘∩’(intersection)來表示，如：

（8）集合A：　{a, b, c}
　　集合B：　{c, d, e}
　　A ∩ B =　{c}

我們也可以把兩個集合間的元素全部放到同一個集合裡，稱之為聯集（union），記做‘A∪B’，如：

（9）集合A：　{a, b, c}
　　集合B：　{c, d, e}
　　A ∪ B =　{a, b, c, d, e}

1.3 集合的表示法

集合裡的元素可能非常多，或甚至無限多，所以不總是可以用列舉法把集合裡的元素全部列舉出來，比方說交通大學的學生有上萬個，如果要一一列舉的話，可能要幾十頁才能列舉完畢，此時用簡潔的符號來表示會比較方便，如（10）。

（10）{ x: φ(x) } = 所有由x所構成的集合，而且x滿足φ所陳述的條件。

按照這個定義，交通大學所有學生的集合表示如下：

（11）{ x: 交通大學的學生(x) } = { x: x是交通大學的學生 }

這種表示集合的方式稱之為集合的抽象(set abstraction)，這種表示方法則稱之為述語表示法 (Predication Notation)。

2. 基礎函數理論

2.1 有序對

上面談到，集合的元素彼此間的先後次序關係並不重要，但對於任何兩個個體 x 和 y，有時先後次序是重要的，此時我們就需要一個有序對（ordered pair）的概念，以<x,y>來表示。對於任一有序對，如果 $x \neq y$，那麼<x,y> ≠ <y,x>。有序對也可以成為集合的元素，因此下面的集合是一個由有序對所構成的集合：

（12）{ <x,y>, <w,z>, <u,v> }

2.2 函數的基本性質

數學，邏輯及自然語言語意學所用到的函數概念其實就是一種特殊的有序對集合。根據函數的概念，有序對中的第二個元素必須獨一無二地和第一個元素配對，這個特質就是函數的最重要特質，定義如下：

（13）一個函數就是滿足下列條件的任何有序對集合 f：
對於任何 x，如果存在著 y 與 z，而且<x,y> ∈ f ，<x,z> ∈ f，那麼 y = z。

根據上面的定義，（14）中的集合是函數，（15）中的集合不是函數：

（14）函數：{ <小明,棒棒糖>,<小華,巧克力>,<小胖,餅乾> }
（15）非函數：{ <小明，棒棒糖>,<小華,巧克力>,<小華,餅乾> }

從（13）中的定義，我們可以知道如果 f 是一個函數的話，那麼下列的定義式子必定成立：

（16）符號‘f(x)’的意義

‘f(x)’ $=_{def}$ 那個使得<x,y> ∈ f的獨一無二的y

從另外一個角度來看，函數其實可以視為一部輸出機器，你輸入給它一個東西（比方說錢幣），他就輸出另外一個東西給你（比方說糖果），也就是，函數其實就是把有序對中的第一個元素當作輸入物，把第二個元素當作輸出物，用符號表示就是 f(x) = y。但函數特別的地方是同一個輸入物，不能得到兩種不同的輸出品，以錢幣做比方，投給機器 10 元硬幣如果得到糖果的話，就永遠只能是糖果，而不可能也是餅乾或是其他東西，也就是不能一對多。

有關符號‘f(x) = y’，當中的 f 稱為函數（function），x 稱為函數 f 的論元，y 則是函數 f 運用到 x 上所獲得的值，有時候也說成函數 f 對應 x 到 y。函數 f 的所有可能的論元 x 所構成的集合稱為函數 f 的定義域（domain），函數 f 的所有可能的值的集合則稱之為函數的值域（range），所以函數就是從定義域對應到值域的一種東西。另外，如果集合 B 是函數 f 值域的一個母集（superset)，我們說函數 f 從定義域映入（map into）B，寫成 ‘f: A → B’。

2.3 函數的定義

函數的內容，經常可以利用下表的方式來表示：

（17）

$$f = \begin{pmatrix} \text{argument 1} & \rightarrow & \text{value 1} \\ \text{argument 2} & \rightarrow & \text{value 2} \\ \cdots & & \\ \text{argument n} & \rightarrow & \text{value n} \end{pmatrix}$$

用集合的方式來表示，（17）和（18）是等同的。

（18）f = { <argument 1, value 1>, <argument 2, value 2>,… <, argument n, value n> }

但函數所包含的有序對往往非常多或甚至是無限多，因此不可能以列舉所有的有序對的方式來呈現集合，此時必須藉助符號系統才能更簡潔地表示函數。

函數往往可以寫成如下的方式：

（19）f: A → B

對於每一個屬於定義域 A 中的元素 x, f(x) = φ(x)

舉下例來說，

（20）$f: N \rightarrow N$

對於每一個屬於自然數N的x，$f(x) = x^2 + 2$

（20）中的第一行告訴我們，函數 f是一個從一個自然數映入另一個自然數的函數，並且標明條件為對於每一個屬於自然數N的x，將函數f運用於x，其結果是 $x^2 + 2$，換句話說（20）中定義的函數f是一個將任何自然數x對應到$x^2 + 2$ 這個數的函數，亦即f(1) = 3, f(2) = 6, f(3) = 11 等等。

再舉（21）為例，

（21） $f: \{x: x 是人\} \rightarrow \{x: x 是人\}$

對於每一個人 x, f(x) = x 的父親

（21）這個函數告訴我們，f 是一個從一個人對應到另外一個人的函數，其條件是，f 運用到一個人 x 上時，其結果是那個 x 的父親，比方說，f 的論元如果是張三，得到的結果就是張三的父親，論元是李四，得到的結果就是李四的父親。

第二章

真值條件語意學基礎[1]

1. 語意學在研究什麼？

自然界裡最美妙的一件事之一就是人類所擁有的語言能力，這個語言能力使得我們可以僅透過嘴巴發出一些聲音，就可以在參與談話者的心裡很精確地描繪出世界的景象或是周遭所發生的事情，而且說話者透過不同的聲音組合，即可無窮盡地傳達任何所要表達的意念，接收者也同樣地可以無窮盡地理解所有的句子，但是人類的這個語言能力是這麼自然平常以致於大家都忘了這是一件多麼神奇的事。

既然一個語言的說話者可以說以及理解無限多個句子，這是怎麼樣辦到的呢？是透過把句子記憶在腦中，然後需要時再取用嗎？答案應該是否定的。一方面我們知道人腦或是人類的生命其實是有限的，二方面我們可以產出以及理解從沒說過或是聽過的句子，所以人類理解語句的知識必然是以一種有限的組合系統儲存於大腦中，只是說話者並不自覺這個有限組合系統的存在罷了。

存在於人腦中的這個有限知識系統是什麼呢？至少應該包含下面兩項：

(a) 有限數量的基本詞彙或是單字
(b) 可從基本詞彙的意思來獲得複雜表達式意思的一組有限數量規則

因此語意學研究的一個主要問題就是人類認知系統是透過怎樣的一種組合系統來從基本詞彙的意義獲得複雜詞組（含句子）的意思。另外的相關問題則是人類是如何獲得這個語意運算系統的？這個系統有多少部分是與生俱來的呢？不同的語言間，其組合運算系統是一致的還是有所差異的呢？如果不同語言間的語意運算系統不同，究竟是如何不同呢？這些問題都是研究自然語言語意學必須回答的問題，只是我們尚不敢奢望這些問題目前都會有答案。不過有關語意的組合運算系統，文獻上倒是有些豐碩的成果，我們會逐步地討論這個組合運算系統的內涵。

2. 什麼是意義？

在上一節裡，我們說語意學研究其實是要發展一套可以從基本詞彙意義來組合出複雜詞組意義的運算系統。所以第一個我們要解決的問題就是回答什麼是「意義」？一個句子或是構成這個句子的詞組以及個別詞彙的意義是如何表達的呢？比方說，「陳水扁」的意義是什麼呢？「跌倒」的意義又是什麼呢？這兩個不同詞彙的意義又如何組合成「陳水扁跌倒」這個完整句子的意義呢？這個問題其實是個很難正面回答的問題，不過我們

[1] 這部分的講義，參照了Seth Cable於麻州大學 2009 年秋季課程Semantics in Generative Grammar的講義以及Heim and Kratzer (1998: 1-12, 13-26)及Chierchia & McConnell-Ginet (2000: 1-33, 53-73, 99-1-4)。

可以透過下面的策略來瞭解意義是什麼。我們可以先問問意義到底在做些什麼事，然後找出那個成就意義所做的事情的東西出來。[2]

當我們說我們瞭解一個句子的意義時，我們實際上到底是瞭解了什麼事情？其實我們瞭解了很多東西，其中至少包含了下面幾項：

(a) 言語的場合妥當性
我們瞭解在什麼樣的場合下說『您過獎了』是妥當的，在什麼樣的場合下說『聽你放屁』是不妥當的。

(b) 言語的語氣情感
我們瞭解說出『我不同意張三的看法』在語氣上顯然比說出『張三根本就是個笨蛋』更加委婉，感情上較不強烈。

(c) 言語的語意內涵
我們瞭解了一句話所傳達的有關這個世界的人、事、物的知訊。

在上面三項裡，(c)項在語意學的研究裡研究得比較多，這也是這本書所主要要探討的部分。下面接著我們會試著去解釋所謂句子的語意內涵到底是什麼意思。

當說話者說出一個句子的時候，其實傳達了許多不同的知訊內容，比方說在下面這個對話裡：

（1）說話者 A: 張三去哪裡了？
說話者 B: 他又去喝酒了。

說話者 B 其實傳達了三個訊息。第一個訊息是張三現在去喝酒，第二個訊息是張三之前喝過酒。第三個可能訊息是張三喜歡喝酒。這三個訊息在會話的語意傳達角色上是有所不同的。

第一個訊息是說話者的斷言（assertion），是說話者透過所說的話語傳達出來的主要內容。第二個訊息則是說話者的預設（presupposition），是言談中被談話者視為理所當然或已知的事實。第三個訊息則是語句在對話中所引起的可能推論(conversational implicature)。這三個不同概念可比較如下：

（2）句子 S 斷言 P = 句子 S 是真的當且僅當 P 是真的。
（3）句子 S 預設 P = 句子 S 是真的或是假的當且僅當 P 是真的。
（4）句子 S 推論出 P = 句子傳達了 P，但非 P 和句子 S 亦不衝突。

斷言和預設不一樣。一個原來的句子如果被否定或是變成疑問句，原先的斷言就不成立

[2] "In order to say what a meaning is, we may first ask what a meaning *does*, and then find something that does that" (David Lewis, "Generative Semantics," in D. Davidson and G. Harman (eds.), Semantics of Naturl Languages (dordrecht, Reidel, 1972), 169-218; R. Montague, Formal Philosophy (New Heaven, Yale University Press, 1974); M. J. Cresswell, Logics and Languages (London, Methuen, 1973).

了，但是預設通常不會因句型的改變而改變。比方說『他又去喝酒了』這個句子改為如下（5a）的否定句或是（5b）這個疑問句，『張三現在去喝酒』這個斷言就不成立或是不一定成立了，但是『張三以前喝過酒』這個預設卻依舊存在。

（5）a. 張三沒有又去喝酒。
　　b. 張三又去喝酒了嗎？

在例句（5a）裡，『張三去喝酒』這個斷言被否定了，自然無法推論出『張三現在去喝酒』，同樣地，在（5b）裡，疑問表達了不確定性，也就無法確立『張三現在去喝酒』這個斷言，因為答句也可能是否定的。

會話中的推論則具有可取消的性質，比方說，『張三又去喝酒了』這句話通常可推論出『張三喜歡喝酒』，但是在下面的上下文裡，這個推論就被取消了。

（6）張三又去喝酒了，可是他是被迫的。

從上面的討論裡，我們很清楚地看出要瞭解語句傳達訊息的整體系統，我們勢必要瞭解語句的斷言、預設及推論是如何從組成語句的各個成分的意義中獲得，而這也正是形式語意學理論所嘗試要回答的問題，在這本書裡，我們的重點會放在斷言如何從組成語句的各個成分的意義中獲得，而較少著墨於預設及推論，我們的目標是要發展出一套組合系統理論，從語句的組成成分的意義來合成獲得複雜詞組或是句子的斷言。

我們上面提到，當一個說話者瞭解一個句子的意思時，很重要的一部份是他瞭解句子的斷言，但斷言的內涵又是什麼呢？我們可以換個角度來談。假設有一個說話者說出『桌子上有一顆馬鈴薯』這樣一句話，我們可以立即瞭解它的意思，我們會瞭解必須有一樣東西叫做桌子，另一樣東西叫做馬鈴薯，而且後者置放在前者的上面。如果這些條件都成立，那麼『桌子上有一顆馬鈴薯』這個句子的斷言就是真的，否則就是假的，所以說，一個句子的斷言其實就是那個句子要為真的條件，句子裡的每一個單字及詞組都是在對句子最終的真假值條件或是斷言條件貢獻出他們的部分條件，這樣看待或研究語句意義的方法就叫做真值條件語意學（Truth-Conditional Semantics），我們所要發展的理論也就是一套真假值條件的組合系統理論，透過它，聽話者就可以組合句子各部分的的意義來獲得那個句子的真假值條件，並據此傳達有關世界的各個樣貌。

我們剛剛說一個句子的意義可以視為那個句子賴以為真的真假值條件，文獻上通常以如下公式來表示一個句子是真的：

（7）*S* 為真當且僅當 S.

以上面所舉的例子來說明，可表示如下：

（8）*桌子上有一個馬鈴薯*（這個句子）是真的當且僅當桌子上有一個馬鈴薯。

在（8）中，第一個斜體的『桌子上有一個馬鈴薯』表示的是實際上說出來或是印刷出來的中文句子，稱之為『目標語言』（object language），目標語言就是我們要去解釋它意義的語言。第二個沒有斜體的『桌子上有一個馬鈴薯』則是用來說明解釋目標語言的語意時所使用的語言，稱之為釋義語言（meta-language），例句（8）中釋義語言所陳述的是讓『桌子上有一個馬鈴薯』這個中文句子為真所必須具備的條件，這些條件可以想像成真實世界所必須出現的情況，也就是說，『桌子上有一個馬鈴薯』這個中文句子是真的句子如果真實世界中有一樣東西是馬鈴薯，另一樣東西是桌子，而且馬鈴薯置放於桌子的上面。

目標語言和義釋語言可以是同一個語言如例句（8），但不必然是同一個，比如說下面例句（9）的目標語言是英文，但是釋義語言則是中文。

（9）*There is a potato on the table* 是真的當且僅當桌子上有一個馬鈴薯。

3. 外延與真假值條件理論

我們上面提到真假值條件語意學是要透過組合一個句子的每一個成分對那個句子的真假值條件所做出的意義貢獻來獲得一個句子的語意，我們用一個簡單的示意圖表示如下：

（10）『張三』的意義 ＋ 『逃跑』的意義 ＝ 『張三逃跑』的意義
『張三逃跑』的意義 ＝ 『張三逃跑』的真假值條件

現在問題是我們要如何建構一套理論來得到上面的結果呢？什麼是『張三』的意義？什麼是『逃跑』的意義呢？這兩者又如何結合成『張三逃跑』的真假值條件呢？ 要說明這個問題，我們必須先解釋外延意義與內涵意義的區別。

『意義』這個詞在日常生活裡的用法其實是很模糊的，以『美國總統』這個名詞組的意義來說，我們原先理解的意思是『美國總統』指的是布希，然而現在指的卻是歐巴馬，所以意思好像改變了。然而從另外一個角度來說，『美國總統』的意義是沒改變的，因為它還是意味著『具有美國最高職務且為三軍統帥的那個人』，由此可見，要談詞語的意義，必須要分割兩個概念，一個概念叫做外延（extension），另一個叫做內涵（intension）：

（11）a. 一個名詞組的外延就是在真實世界裡那個名詞組所實際指稱的對象。
例如：現任『美國總統』的外延指的是歐巴馬。
b. 一個詞組的內涵指的是那個詞組背後所表達的概念，或是決定真實世界實際指稱對象的條件，這些概念條件決定了那個詞組在特定的時間、情況、場合的實際指稱對象。
例如：『美國總統』的內涵永遠指的是具有美國最高職務且為三軍統帥的那個

人，可是實際指稱對象在不同時間可能是不同的。

所以名詞組的意義可以分為外延意義及內涵意義，外延意義是一個詞組在真實世界所對應的對象，而內涵意義則是那個詞組背後所表達的概念，這個概念決定了那個詞組在不同場合，時間或是世界裡的指稱。

那麼句子的意義又是什麼呢？句子的意義同樣有外延跟內涵。一個句子的內涵初步可以理解為那個句子的概念或命題內容（propositional content），命題內容可視為我們上面所討論過的真假值條件，要注意一個句子所表達的命題內容其實不真也不假，比方說，『張三愛瑪麗』這個句子，任何一個說中文的人都了解它表達什麼意思，都知道在什麼樣的情形底下，這個句子會是真的，也就是，這個句子在說有一個個體叫做張三，另一個個體叫做瑪麗，而且前者對後者具有愛的關係，但是這個句子實際上是真還是假，要看真實世界的實際情況。如果現實情況裡真有一個個體叫張三，另一個個體叫瑪麗，而且前者對後者也真的具有愛的關係的話，那麼『張三愛瑪麗』這個句子就可以確定為真。換句話說，句子的真假值條件是一種比較抽象的概念，我們透過它們來決定句子所表述的內容在真實世界裡的真或假，所以真假值條件可以視為就是句子的內涵，而實際的真或假是特定具體情況底下的值，就是那個句子的外延，內涵是決定外延的方式，而外延則是內涵在特定情況底下的指稱（denotation）。

整理上面所說的，如果“X”代表一個詞，詞組或是句子，其外延與內涵應理解如下：

(A) “X”的內涵

是 X 背後所表達的概念內容， 這個概念內容決定了在特定的場合，時間或是世界裡，X 的實際指稱是什麼。

(B) “X” 的外延

在特定的場合，時間或是世界裡，“X”實際所指稱的東西。

(C) 示例：

『美國總統』的內涵 = 具有美國三軍統帥最高權力的那個人

『美國總統』的外延 = 歐巴瑪 （在 2011 年二月這個世界及時間點）

『林若望是語意學老師』的內涵 = 『林若望是語意學老師』為真當且僅當有一個個體叫做林若望，他是位老師，而且他教語意學。

『林若望是語意學老師』的外延 = 真 （在 2011 年二月這個世界及時間點）

4. 以外延為基礎的組合語意學

現在我們已經知道一個句子的外延是一個真假值，一個名詞組的外延則是較為具體的個體，而不是抽象的概念，我們用符號“[[X]]”來表示句子，詞組或是單字 X 的外延:

（12）[[X]] = X 的外延

接下來要探討的問題是：句子的外延是如何從各個單字及詞組的外延組合而成？以『張三逃跑』這個句子為例，我們要說明如何得到下面的情形。

（13）[[張三]] + [[逃跑]] = [[張三逃跑]] = 真 ，或是
[[張三]] + [[逃跑]] = [[張三逃跑]] = 假

也就是『張三』的外延和『逃跑』的外延組合起來就是『張三逃跑』這個句子的外延。現在假設在真實世界裡張三的確逃跑，而專有名詞『張三』的外延指的就是現實世界裡張三那個人，我們就會得到下面的結果：

（14）Zhangsan + [[逃跑]] = 真

也就是說，『逃跑』這個單字的外延和張三這個個體組合起來會得到一個真的值，如果張三真的有逃跑的話。換個角度來說，『逃跑』的外延好比是一種裝置，輸入給它張三這個個體，如果這個個體符合函數所描述的為真條件，就會輸出真值的結果，所以不及物動詞『逃跑』的外延像是數學裡的函數，因為函數要求給予一個論元，就會得到一個獨一無二的值。真值條件語意學家就是利用函數的這個特質來分析像『逃跑』這樣的不及物動詞，在這樣的分析底下，『逃跑』的意義可以定義如下：

（15）[[逃跑]] = 一個把個體對應（映入）到真假值的函數，且值為真當且僅當
那個個體逃跑。

用比較形式化的語言來表達，『逃跑』的意義可以表示如下：

（16） [[逃跑]] = f: {x: x is an entity} → {T, F}
for every y ∈ {x: x is an entity}, f(y) = T iff y runs away.

（16）所表達的意思是說“[[逃跑]]”是個函數 f，這個函數會從成員為個體的定義域映入成員為真或假的值域。另外，在（16）裡，我們的目標語言是中文，但是我們的釋義語言用的則是英文。

目前我們的字典裡，包含了兩類型的單字，一種為專有名詞，一種為不及物動詞，字典裡標明專有名詞的外延就是真實世界裡那個專有名詞所指稱的個體，不及物動詞的外延則是一個從個體映入真假值的函數。

（17）人腦字典中的單字 (Lexical Entries; LA)
a. [[張三]] = Zhangsan
b. [[逃跑]] = f: {x: x is an entity} → {T, F}
for every y ∈ {x: x is an entity}, f(y) = T iff y runs away.

有了個別單字的外延語意解釋後，接下來的問題是，這些不同單字的外延語意是如何組合的呢？在談這個問題之前，讓我們先考慮下面兩個例句的語意解釋：

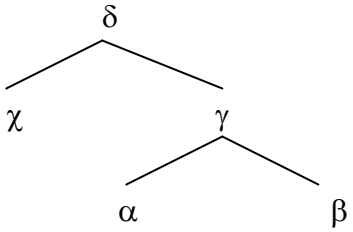
（18）a. 張三喜歡瑪麗。
　　b. 瑪麗喜歡張三。

（18a）和（18b）兩個句子語意顯然不同，因為張三喜歡瑪麗時，瑪麗不見得喜歡張三，反之亦然，但是這兩個句子所用到的單字完全一樣，所以一個句子的語意解釋不可能只是把所有的單字的意思加在一起就好了，一定還有其他的因素影響了句子的語意解釋。這個因素是什麼呢？是句子的組合方式，也就是句子的句法結合方式不一樣。在（18a）中，及物動詞『喜歡』先和賓語『瑪麗』組合好，接著再跟主語『張三』組合形成完整的句子，在（18b）中，則是動詞『喜歡』先和『張三』組合，接著再與瑪麗組合，所以句子的語意解釋除了仰賴個別單字的語意外，也由這些單字的句法組合方式來決定最終的語意解釋，這就是語意學研究上著名的 Frege組合原則。[3]

（19）組合原則 (Principle of Compositionality)
　　一個句子的語意是由組成這個句子的各個成分的語意及其句法組合方式
　　所決定。

所以要討論句子的語意解釋，我們也得對句子的句法結構有所假設才行。暫時我們假設句子的句法結構為二分叉結構，如下圖：

（20）



我們假設句法結構樹，含所有終端節點下的單字，就是語意解釋規則所要運用的對象，而語意解釋規則中最重要的一條規則叫做函數的運用規則。

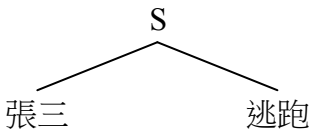
（21）函數的運用規則[4] (The Rule of Functional Application; FA）
　　如果 X 是個分叉節點，底下有 Y 與 Z 兩個節點，而且[[Y]]是一個函數，
　　且定義域包含[[Z]]，那麼[[X]] = [[Y]]([[Z]])

（21）這條規則就可以用來解釋上面所討論的『張三逃跑』那個句子。底下就是得到那

[3] G. Frege, “Logische Untersuchungen. Dritter Teil: Gedankengefüge,” *Beiträge zur Philosophie des deutschen Idealismus*, 3 (1923-6), pp. 36-51.
[4] Heim, I & Kratzer, A, Semantics in Generative Grammar (Oxford, Black Publishers Ltd, 1998), p. 44。

個句子所需用到的句法結構及語意運算：

（22）a. 句法結構



b. 語意運算

(i) [[S]] = [[逃跑]]([[張三]]) 使用函數運算規則 (FA)

(ii) = [[逃跑]](Zhangsan) 使用詞彙意義 (LA)

(iii) = $f_{run\text{-}away}$(Zhangsan) 使用詞彙意義 (LA)

(iv) = T iff Zhangsan runs away (iff there is an invididual whose name is Zhangsan and he has the property of running away.)

在此請注意，“iff” 後面的 “Zhangsan runs away” 並不代表一個英文句子，而是例句（22a）要為真的真假值條件，它是我們整個語意系統釋義語言的一部份。

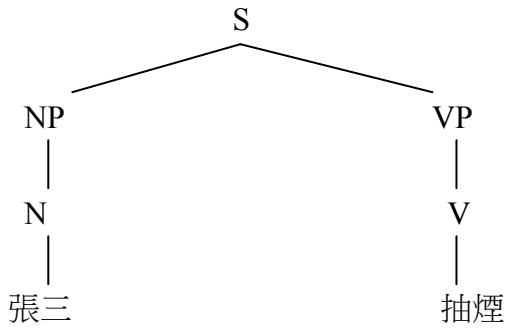
所以，只要利用個別單字的語意，適當的句法假設，必須的語意解釋規則如函數運算規則以及世界的真實資訊，我們就可以得到句子對應到外在世界的外延語意，這樣的一個語意系統就叫做外延語意學（extensional semantics），我們假設人腦就是利用組合語意的循環運算規則來得到句子要為真的真假值條件。

5. 語意解釋規則

我們在上一節已經提到，語意解釋規則的輸入端口（input）是句法部門所衍生的句法結構樹，語意解釋規則是針對輸入端口的結構，含終端節點的單字，作語意解釋，這個假設是組合原則的重要內涵之一，也正是這個假設解釋了為什麼由相同的單字所組成的不同句子，語意會有所不同，因為不同的句子，其句法結構不一樣，所以語意理論在相當程度上仰賴著句法結構。

我們對句法結構的一個主要假設是結構樹基本上是雙分叉結構，相對應於這樣的結構，我們的語意對應規則通常是函數運用規則，在分叉的兩個節點中，我們要看看其中一個節點是否可以充當函數，另一節點是否可以充當那個函數的論元，可是很多時候，句法結構的節點有時候是不分叉的，比方說名詞組底下只有一個名詞，動詞組下只有一個不及物動詞，如（23）。

（23）



像這種不分叉的結構樹，要如何解釋他們的語意呢？Heim & Kratzer提出如下解釋規則：[5]

（24）非分叉節點的語意解釋規則

如果 X 節點沒有分叉，而 Y 是 X 的唯一兒女節點，那麼[[X]] = [[Y]]。

根據這條規則，（23）中 NP 的語意解釋完全等同於 N 的語意解釋，VP 的語意解釋完全等同於 V 的語意解釋 ，個別詞類所構成的終端節點則由類似終端節點語意解釋規則負責解釋。

（25）終端節點語意解釋規則

如果 X 是終端節點，那麼[[X]]的語意解釋由字典中的詞彙意義決定。

在上面例（23）中，也就是[[NP]] = [[N]] = [[張三]] = Zhangsan， [[VP]] = [[V]] = [[抽煙]] = λf: {x: x is an individual} → {True, False}，所以句子的語意運算歸根到最後是由個別單字的語意解釋所決定，而這點正是語意組合規則的另一個重要精神。

6. 詞彙的語意解釋

在第四節裡，我們已經稍微討論了不及物動詞『逃跑』的詞彙意義，並把它的意義分析成某一種函數，這個函數帶上個體論元後，就會根據函數運用後所產生的真假值條件來判斷句子的真或假。現在一個很重要的問題是，我們是如何知道或決定一個個別詞彙的意義呢？語意學家所使用的方法，並非內省式地依靠直覺來判斷某個詞彙所代表的概念，而是看那個詞彙所出現的句子的最終真假值條件來推估那個詞彙對整體真假值條件的貢獻為何。以『張三逃跑』這個句子為例，我們必須做如下的推斷：

（26）a. 我們知道『張三逃跑』整個句子的真假值條件如下：必須有一個個體叫張三，如果張三這個個體做了逃跑的行為，那麼『張三逃跑』這個句子就是真的，否

[5] Heim, I & Kratzer, A, Semantics in Generative Grammar (Oxford, Black Publishers Ltd, 1998), p. 49。

則就是假的。

b. 考慮『張三逃跑』這個句子中已經確知的詞彙意義，比如我們確知專有名詞『張三』的外延意義指的是張三這個人。

c. 根據（a）與（b），我們知道『逃跑』必須是一個可以和個體結合起來產生真假值條件來判斷真假的東西，那個東西（也就是一個函數）就是『逃跑』這個詞彙對於句子整體真假值條件所做出的意義貢獻。

我們以後會討論，上述這種決定詞彙意義的方式對於功能詞（如連接詞『或是』或是其他虛詞）相當有效，但對於實詞部分，的確忽略了許多比較直覺意義的部分，也因此曾遭致批評。

7. 集合與對應的函數

在第四節裡，我們把不及物動詞的語意視為由個體映入真假值的函數，如（27a），但是語意學文獻上很多書是把不及物動詞的外延視為一個個體的集合如（27b）。

（27）a. [[逃跑]] = f: {x: x is an entity} → {T, F}
for every y ∈ {x: x is an entity}, f(y) = T iff y runs away.

b. [[逃跑]] = {張三，李四，王五…}

以集合的角度來分析語意，[[張三逃跑]]這個句子可以判斷為真，如果張三這個個體是[[逃跑]]所代表的個體集合中的一個成員，所以把不及物動詞的外延視為一個個體的集合也依舊可以用來判斷句子的真假值。

其實我們有很好的理由相信函數的表示方式和集合的表示方式，其意義是一樣的，因為對於每一個個體的集合，都可以有一個相對應的獨一無二的函數來把那些個體對應到真假值，對於每一個從個體到真假值的函數，也都可以得到一個和函數相對應的獨一無二的個體集合，其交換定義方式如下：

（28）a. 個體集合 → 函數[6]
設*A*為一個體的集合。那麼描寫集合*A*的函數（稱之為特徵函數characteristic function）就是一個函數f_A，這個函數f_A對於任何一個個體，f_A(x) 會得到真值當且僅當x是*A*集合裡的一個成員。

b. 函數 → 個體的集合[7]

[6] 英文定義如下: Let A be a set. Then $char_A$, the characteristic function of A, is that function f such that, for any x∈A, f(x) = 1, and for any x∉A, f(x) = 0. 請參看Heim, I & Kratzer, A, Semantics in Generative Grammar (Oxford, Black Publishers Ltd, 1998), p. 24。

[7]英文定義如下: Let A be a set. Then $char_A$, the characteristic function of A, is that function f such that, for any x∈A, f(x) = 1, and for any x∉A, f(x) = 0. 請參看Heim, I & Kratzer, A, Semantics in Generative Grammar (Oxford, Black Publishers Ltd, 1998), p. 24。

設*f*為一個從個體到真假值的函數。那麼，由函數*f*所描寫的集合是一個集合A_f，而且對於任何個體x，x是A_f的一個成員當且僅當*f*(x)為真。

因為集合和函數之間的等同對應關係，不及物動詞的外延語意既可視為函數，也可視為集合，在這本書裡，我們偶而會因為說明的方便性而交換使用。

舉例子來說明，假設有一集合A = {Ann, Jan, Maria}，那麼相對應的函數f_A如下:

$$f_A = \begin{pmatrix} \text{Ann} & \rightarrow & 1 \\ \text{Jan} & \rightarrow & 1 \\ \text{Maria} & \rightarrow & 1 \\ \text{Jack} & \rightarrow & 0 \\ \cdots & & \end{pmatrix}$$

反個方向，如果有一函數f_A如下，

$$f_A = \begin{pmatrix} \text{Ann} & \rightarrow & 1 \\ \text{Jan} & \rightarrow & 1 \\ \text{Maria} & \rightarrow & 1 \\ \text{Jack} & \rightarrow & 0 \end{pmatrix}, \quad \cdots$$

那麼相對應的集合A 就是所有把f_A的定義域裡映入為真值的個體抓出來所形成的集合，也就是$\{x \in D: f_A(x) = 1\}$ = {Ann, Jan, Maria}。

習題 1: 請運算下列句子的真假值條件. (請暫時先忽略“了”)

(i) 約翰離開了。

習題 2: 假設言談領域裡有 6 個個體{a, b, c, d, e, f}，其中三個 a, b, c 很認真工作，其餘的 d, e, f 不認真工作，請利用特徵函數來表示，並給出和這個特徵函數相對應的集合。

第三章

形式語意學的雛形系統

1. 目前為止的系統

我們在上一章已經粗略地介紹了真假值條件語意學如何解釋句子的外延語意，根據我們的討論，語法的句法部門會賦予每個句子一個結構樹，這個結構樹成為語意規則的運作對象，目前我們討論的句子都是簡單句，只包含一個專有名詞主語及一個由不及物動詞所構成的動詞組，我們的語意部門則包含兩部分，一部份是解釋結構樹的語意規則，另一部份則是個別詞彙的語意解釋，規則摘要如下。

（1）a. 語意解釋規則

(i) 函數的運用規則 (FA)

如果 X 是個分叉節點，底下有 Y 與 Z 兩個節點，而且[[Y]]是一個函數，且定義域包含[[Z]]，那麼[[X]] = [[Y]]([[Z]])

(ii) 非分叉節點的語意解釋規則 (NN)

如果 X 節點沒有分叉，而 Y 是 X 的唯一兒女節點，那麼[[X]] = [[Y]]。

(iii) 終端節點語意解釋規則 (TN)

如果 X 是終端節點，那麼[[X]]的語意解釋由字典中的詞彙意義決定。

b. 詞彙意義

(i) [[張三]] = Zhangsan

(ii) [[逃跑]] = f: {x: x is an entity} → {T, F}

for every y ∈ {x: x is an entity}, f(y) = T *iff* y runs away.

有關詞彙意義部分，函數的表示方式，我們可以再進一步簡化。讓我們用符號D來表示某樣東西的範域（Domain），D_e表示個體(entity)的範域，也就是所有個體的集合，D_t表示真假值的範域，也就是所有可能的真假值的集合。

（2）D_e = ｛x: x是一個個體｝

D_t = ｛T, F｝ or {1, 0} (T or 1= True; F or 0 = False)

這樣子，[[逃跑]]的語意就可重新寫成（3）。

（3）[[逃跑]] = f: D_e → D_t

for every y ∈ D_e, f(y) = T *iff* y runs away.

有了範域的概念以後，我們可以進一步地來介紹語意類別的概念，在上一章裡，我們說，句子的外延是真假值，專有名詞的外延是個體，我們現在可以換另一種方式來說，用語意類別的概念來區分語言中不同表達式的外延類別，比方說，專有名詞如『張三』指稱個體，所以專有名詞的語意類別屬於*類別e*，而句子的外延是真假值，所以句子的語意類別屬於*類別t*。那麼，不及物動詞是屬於什麼類別呢？從（3）中的定義，我們已經知道不及物動詞的意義是從個體映入真假值的函數，語意學文獻以$D_{<e,t>}$來表示所有邏輯上可能從個體映入真假值的函數，也就是不及物動詞的語意類別是*類別<e,t>*。

（4）語意類別摘要

語言表達式	語意類別種類	指稱意義
專有名詞	e	個體
句子	t	真假值
不及物動詞	<e,t>	從個體映入真假值的函數

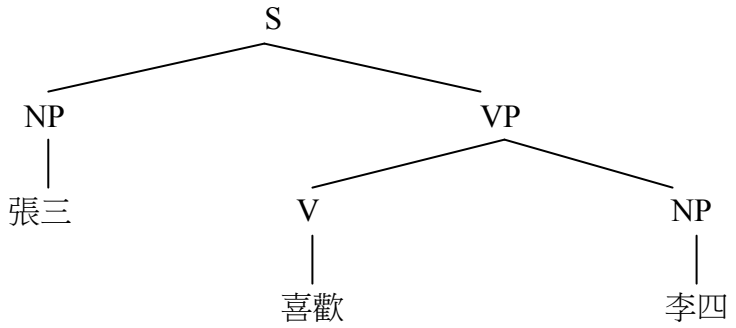
從另外一個角度來說明，所謂*<e,t>*類別的函數，就是這個函數的論元必須是*類別 e*，此函數的輸出值則是類別 *t*。更概括地說，除了 *e* 和 *t* 是一種簡單原始類別，語言的系統還可以有複雜的語意類別，用符號'<α,β>'來表示，所有的複雜類別都表示一種函數，括弧的左邊的部分'*α*'代表函數的論元，右邊的部分'*β*'則是函數的值。

（5）類別<α,β>：*α*代表函數的輸入項（論元），*β*則是函數的輸出項（值）。

2. 及物動詞的語意

有了複雜語意類別的概念後，接著要討論的就是及物動詞了，底下是一個及物句及它的結構樹。

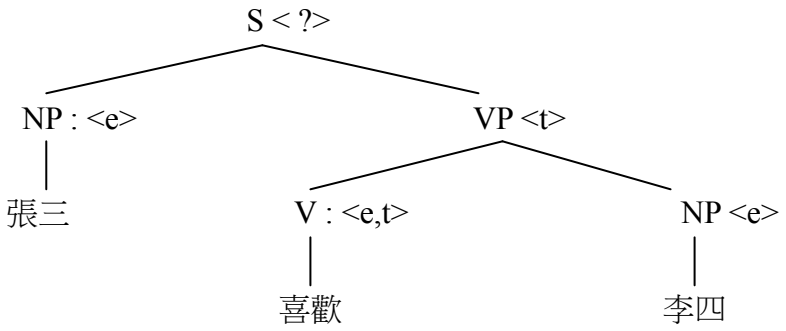
（6）



我們知道專有名詞指稱個體，所以『張三』和『李四』的語意類別是*類別 e*，但是及物

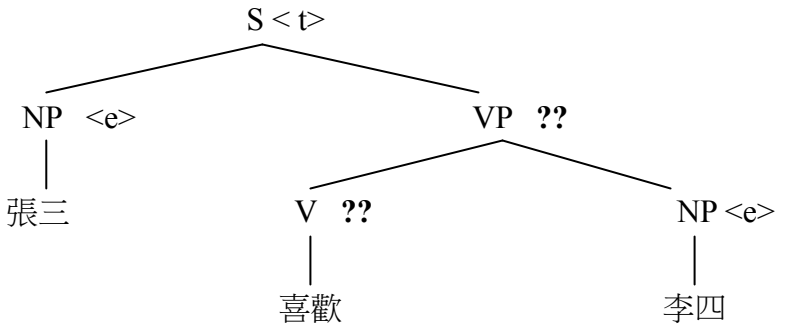
動詞如『*喜歡*』的語意類別是什麼呢？和不及物動詞一樣是*類別<e,t>*嗎？如果『*喜歡*』的語意類別是*類別<e,t>*的話，那麼『*喜歡*』的輸入項論元就必需是一個*類別 e* 的個體，其輸出結果則是一個真假值，也就是（6）中的 VP 必須是*類別 t*，可是如此一來，VP 和主語名詞組『*張三*』就無法組合了，因為無論是 VP 還是主語名詞組 NP，沒有一個可以當函數，另一個當論元，因此整個句子最終的語意值為何無從得知。

（7）



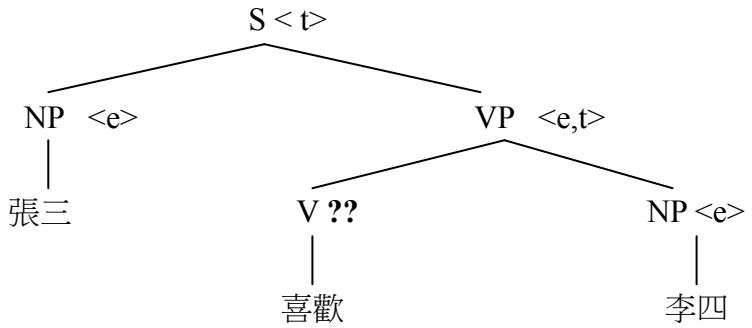
因此及物動詞的語意類別不可能和不及物動詞一樣是*<e,t>*，我們必須引介新的語意類別才行。這個新的語意類別是什麼呢？首先我們已經知道兩個專有名詞的語意類別都是*類別 e*，而且我們也知道句子的語意類別是*類別 t*，但是我們不知道及物動詞及動詞組的語意類別，如下圖：

（8）



從圖（8）中，我們知道 VP 的外延必須和主語名詞組為類別 *e* 的外延組合成類別為 *t* 的句子外延，因此（8）中動詞組的語意類別一定要是*類別<e,t>*，和不及物動詞的類別一樣，如下圖：

（9）



接下來，我們知道及物動詞『*喜歡*』必須和類別為 *e* 的賓語名詞組合併組合成語意類別為<*e,t*>的動詞組語意，因此及物動詞『*喜歡*』的語意必須是類別<*e,*<*e,t*>>。也就是輸入項論元為類別 *e*，輸出項的值是類別為<*e,t*>的函數。以函數的術語來說，及物動詞的語意是一個帶上個體論元以後會映入另一個從個體映入真假值函數的函數，而且會有下面的真假值條件結果：

（10）[[*張三喜歡李四*]] = T iff Zhangsan likes Lisi。

根據上面的真假值條件結果，我們現在可以輕易得到（9）中的動詞組語意如下：

（11）[[*喜歡李四*]] = $f : D_e \rightarrow D_t$

For every $x \in D_e$, f(x) = T iff x likes Lisi

從這個地方，我們又可進一步地對及物動詞『*喜歡*』做如下的結論：當『*喜歡*』和賓語名詞組『*李四*』組合，其結果必須是（11）這個類別為$D_{<e,t>}$的函數，換句話說，及物動詞『*喜歡*』的語意是如下的函數：

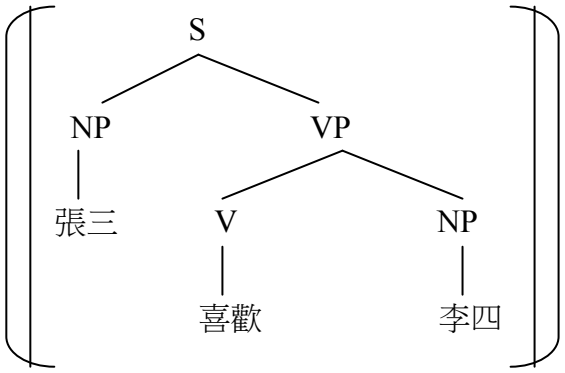
（12）[[*喜歡*]] = $f_{like} : D_e \rightarrow D_{<e,t>}$

for every $x \in D_e$, $f_{like}(x) = h_x : D_e \rightarrow D_t$

for every $y \in D_e$, $h_x(y)$ = T iff y likes x

有了『喜歡』這個新的詞彙意義，們現在可以來運算及物句的真假值條件了。

（13） a.



= T iff

b. [[S]] = T　iff　(by FA)
c. [[VP]]([[NP]]) = T　iff　(by NN)
d. [[VP]]([[*張三*]]) = T　iff　(by LE)
e. [[VP]](Zhangsan) = T　iff　(by FA)
f. [[*喜歡*]]([[NP]])(Zhangsan)　(by NN)
g. [[喜歡]]([[*李四*]]) (Zhangsan) = T　iff　(by LE)
h. [[喜歡]](Lisi) (Zhangsan) = T　iff　(by LE)
i. f_{like}(Lisi)(Zhangsan) = T　(by definition of f_{like})
j. h_{Lisi}(Zhangsan)　= T　iff　(by definition of h_{Lisi})
k. Zhangsan likes Lisi

習題 1: 上面的真假值條件運算，是一種從上到下的語意運算方式，但語意運算其實也可以由下到上，請練習由下到上如何運算。

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3. 概化的語意類別系統

如前面章節所討論，我們的語意系統有一個很重要的語意類別概念，也就是，對於各式各樣的語言表達式，從個別的單字，到詞組，到句子，不同的語意就有相對應的不同語意類別，目前為止，我們的語意類別有如下幾種：

（14）語意類別

語言表達式	語意類別種類	指稱意義
專有名詞	e	個體
句子	t	真假值
不及物動詞	<e,t>	從個體映入真假值的函數
及物動詞	<e,<e,t>>	從個體映入類別為<*e,t*>的函數

目前為止，我們所考慮的句子都非常簡單，所需要的語意類別也不多，但一旦我們討論的句子越多，表達方式越趨複雜時，所需的語意類別就會越多，類別也會越複雜，因此我們需要一個足以提供自然語言所需的所有可能語意類別的類別系統，這個系統可以定義如下：

（15）可以表達邏輯上所有的可能類別的推演定義
a. *e* 是一種語意類別
b. *t* 是一種語意類別
c. 如果α是一種語意類別，β也是一種語意類別的話，那麼<α,β>也是一

種語意類別。

在上面的定義裡，*e* 和 *t* 是語意類別系統裡的兩個原始語意類別，其它的類別都是透過（15c），這個推演定義所獲得的語意類別，比如 *e* 是一個語意類別，*t* 也是一個語意類別，所以<*e,t*>也是一個語意類別，因為<*e,t*>是個語意類別，所以<*e,*<*e,t*>>或是<<*e,t*>,<*e,t*>>，<<*e,t*>,*t*>等也都是一個語意類別。

根據（15），不同語意類別的相對應範域也可以推演定義如下：

（16）a. 範域D_e是所有個體的集合
b. 範域D_t是所有真假值的集合
c. 對於任何兩個範域，D_α及D_β, $D_{<\alpha,\beta>}$也是一個可能的範域，是一組所有從D_α映入D_β的函數的集合。

4. Lambda 表達法

讀者如果仔細想的話，會發現自然語言裡，大多數的表達式，其語意都是某種函數，因此我們如果可以用一種比較簡單的方式來表達函數的話，會讓我們的語意系統看起來更為簡潔。我們這一節要介紹的就是數學家原本用來表示函數的方法，也就是 Lambda 'λ' 符號的使用。

（17）Lambda 表達法 I
a. λ的句法 ： (i) $[\lambda x : x \in D_\alpha . \text{Predicate}(x)]$，或是
(ii) $[\lambda x_\alpha . \text{Predicate}(x)]$
b. λ的語意： $f : D_\alpha \rightarrow D_t$
for every $x \in D_\alpha$, $f(x) = T$ iff Predicate(x)
c. 舉例：[[逃跑]] = $[\lambda x : x \in D_e . \text{runs-away}(x)]$

（17）中Lambda表達式的句法包含了三部分。第一部份是lambda加上一個變項，第二部分是冒號後面標示lambda變項的語意類別，第一、二部份可以縮寫成（aii）的方式。第三部分則是告訴我們這個lambda表達式運用到一個類別為D_α的論元後會輸出一個真值，如果'Predicate(argument)'所表示的條件完全符合。

每一個 lambda 表達式都表示它是一個在意義上尚不完整（unsaturated）的東西，它需要帶上一個符合由 lambda 所標示的語意類別的論元，意思才算完整（saturated）。比如（17a）就表示這個 lambda 式子需要一個類別 *e* 的論元，述語(Predicate)的語意才算完整，所以 lambda 符號所表示的意義，就是它是個必須帶上某種論元的函數，而函數都是不完整的東西，不像個體或是真假值，他們本身已經完整無缺。

函數必須運用到論元上，其表達方式如下：

（18）[λx :...](argument)

舉例： [λx. x∈D_e. x runs away](Zhangsan) = T iff Zhangsan runs away.

我們上面的例子是 lambda 函數帶上論元後會得到一個真假值，且為真的條件必須是‘Zhangsan runs away’。在這個例子裡，函數運用到論元的結果是一個真假值，這是典型的把動詞組的語意運用到主語名詞組的結果，但是函數運用到論元的輸出結果不一定都是真假值，而有可能是另一個函數，比如剛剛討論過的及物動詞的語意就是這樣的一個函數。

（19）Lambda 表達式 II

λ句法：[λx : x∈D_α.[λy : y∈D_β. ⋯(x,y)⋯]]

λ語意：從一個類別為α的論元映入一個類別為<β,...>的函數

舉例：[λx : x∈D_e.[λy : y∈D_e.y likes x]] (類別為<e,<e,t>>的函數)

每一個 lambda 表達式都屬於某種語意類別，Lambda 表達式和語意類別之間的對應關係，其判斷方式如下：

（20）句法：[λx : x∈D_α.[⋯⋯]

類別： <α, β>

第一個lambda所約束的變項*x*的語意類別就是α的語意類別，‘⋯⋯’的語意類別就是β的語意類別。以(17c)的例子來說，第一個lambda所約束的變項x的語意類別是類別*e*,而‘x runs away’因為是個句子，所以語意類別是*t*，因此（17）這個表達式的語意類別是<*e,t*>。在（19）中，第一個lambda所約束的變項x的語意類別是類別*e*,而‘[λy : y∈D_e.y likes x]’的語意類別是<*e,t*>，所以（19）的語意類別是<*e,*<*e,t*>>，圖示如下：

（21）[λx : x∈D_e.[λy : y∈D_e. y likes x]]

<e, <e, t>>

Lambda 表達式既然表示函數，就表示他們可以運用到論元上面，比方說不及物動詞組和主語名詞組的組合就可以表示如下：

（22）a. [[張三逃跑]] = T iff

[λx. x∈D_e. x runs away](Zhangsan) = T

此時的運算過程，我們必須透過一條 Lambda 轉換規則，將論元帶入由 lambda 所約束的

變項，並將 lambda 消除。

（23）Lambda 轉換規則（The Rule of Lambda Conversion）
$\lambda x : x \in D_e.[\cdots x \cdots]](z) = T$ iff $[\cdots z \cdots]]$

根據這條規則，（22）的演算結果如下：

（24）$[\lambda x.\ x \in D_e.$ x runs away](Zhangsan) = T iff Zhangsan runs away

在這個地方，我們必須特別注意，如果'[…x…]'中的 x 不是由最左邊的 lambda 所約束，而是由其他更裏層的 lambda 所約束的話，lambda 轉換規則是不能使用的。

（25）$\lambda x : x \in D_e.[\cdots \lambda x.[\cdots x \cdots] \cdots](z) \neq [\cdots \lambda x.[\cdots z \cdots] \cdots]]$

有關 lambda 轉換另一個要注意的事情是如果一個 lambda 表達式連續包含了幾個 lambda，如及物動詞的語意，那麼 lambda 轉換規則的使用要特別注意先後次序，也就是整個 lambda 表達式後面所接的第一個論元要對應到 lambda 表達式裡所出現的第一個 lambda，第二個論元則對應到 lambda 表達式裡所出現的第二個 lambda，依此類推，如（26）。

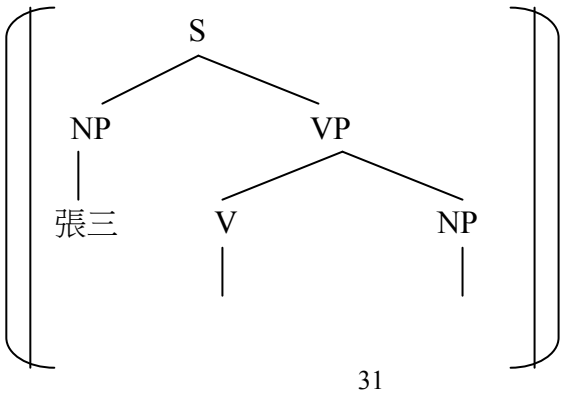
（26）$[\lambda x : x \in D_e.[\lambda y : y \in D_e.$y likes x]](Lisi)(Zhangsan)

使用了 lambda 轉換規則後，（26）就會輸出成（27）的結果，以 Lisi 取代 *x* 這個變項，以 Zhangsan 取代 *y* 這個變項，換句話說，Lisi 是主語，Zhangsan 是賓語。

（27） $[\lambda x : x \in D_e.[\lambda y : y \in D_e.$y likes x]](Lisi)(Zhangsan) = T iff
$[\lambda y : y \in D_e.$y likes Lisi](Zhangsan) = T iff
Zhangsan likes Lisi

利用新的 lambda 表達式來做運算，『張三喜歡李四』運算結果如下：

（28） a.



= T iff

喜歡　　李四

b. [[S]] = T　iff　　(by FA)
c. [[VP]]([[NP]]) = T　iff　　(by FA)
d. [[VP]]([[*張三*]]) = T　iff　　(by TN)
e. [[VP]](Zhangsan) = T　iff　　(by FA)
f. [[*喜歡*]]([[NP]])(Zhangsan) = T iff　　(by NN)
g. [[喜歡]]([[*李四*]]) (Zhangsan) = T　iff　　(by NN)
h. [[喜歡]](Lisi) (Zhangsan) = T　iff　　(by TN)
i. [λx : x∈D_e.[λy : y∈D_e.y likes x]](Lisi)(Zhangsan) = T　iff　　(by LC)
j. [λy : y∈D_e.y likes Lisi]](Zhangsan) = T　iff
k. Zhangsan likes Lisi

5. 非個體為論元的函數

我們上面的例子，都是以類別 *e* 的個體做為函數的論元，自然語言裡有沒有以個體以外的東西來當作函數的論元的例子呢？以下我們來討論幾個例子，首先，我們來看例句（29）。

（29）[$_{S1}$[$_{S2}$張三得獎][$_{VP}$是假的]]。

這個句子的主語『張三得獎』是個句子，而句子的語意類別為類別 *t*，類別 *t* 是語意已經完整的表達式，所以必然是動詞組『是假的』為函數，子句主語為論元，否則函數的運用規則無法使用，換句話說，『是假的』必須帶上一個類別為 *t* 的子句來當作論元，而最終的結果也必須是個類別為 *t* 的表達式，而且只有在子句主語的真假值為假時，整個句子才會為真，所以動詞組『是假的』語意可以定義如下：

（30）[[*是假的*]] = λP: P∈D_t.P = F.

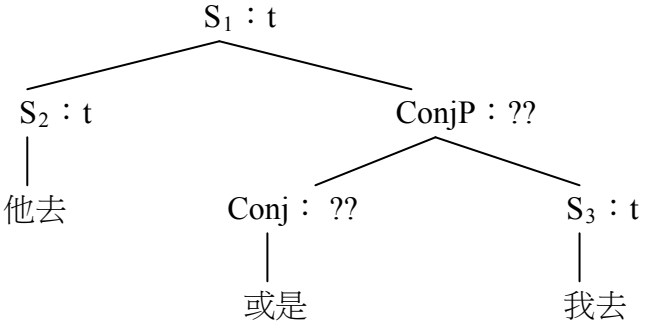
根據上面這個定義，（29）的語意可以運算如下：

（31）a. [[張三得獎是假的]] = T　　iff
b. [[是假的]]([[張三得獎]]) = T　　iff
c. [[張三得獎]] = F　　iff
d. Zhangsan did not win the prize.

自然語言中也有一些成分可以連接兩個句子，比如連接詞『或是』就是，如例句（32a）。假定自然語言的句法結構以雙分叉為主，那麼（32a）的結構圖大致如（32b）。

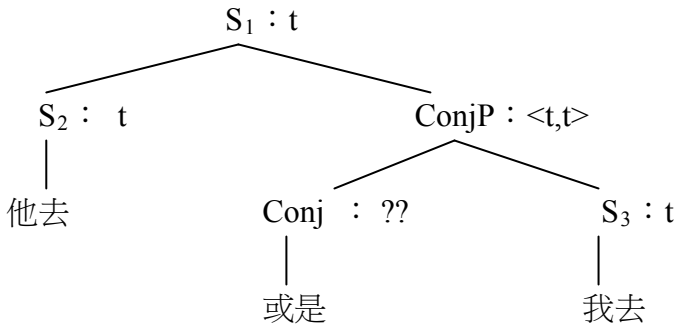
（32）a. 他去或是我去。

b.



在上面的結構裡，首先我們知道整個句子S_1的語意類別是類別*t*，我們也知道『他去』以及『我去』的語意類別也都是類別*t*，唯一不知道的是*ConjP*以及連接詞『或是』的語意類別。根據函數的運用規則，*ConjP*必然要被分析成一個意義尚未完整的函數，因為S_2已經是個在意義上完整無缺的表達式。從這個地方，我們就可以進一步推論出S_2應該是*ConjP*的輸入項論元，又因為最終的輸出項結果必須是類別*t*，所以我們得知*ConjP*的語意類別是<*t,t*>。

（32’）



接著我們來看『或是』的語意類別。這個連接詞必須被分析成函數，因為它的姊妹節點『我去』是個意義完整的句子，也就是『或是』必須以S_3為輸入項論元，*ConjP*為輸出項結果，又因為*ConjP*的語意類別是<*t,t*>，連接詞『或是』的語意類別就是<*t,*<*t,t*>>，必須帶上兩個語意類別為*t*的句子，語意才能完整，這個語意類別和及物動詞有異曲同工之妙，換句話說，連接詞可以視為及物連接詞，其語意解釋可以定義如下：

（33）[[或是]] = λP: P∈D_s.λQ: Q∈D_s.P = T or Q = T.

根據（33）這個定義，（31）這個句子的真假值運算如下：

（34）a. [[他去或是我去]] = T　iff

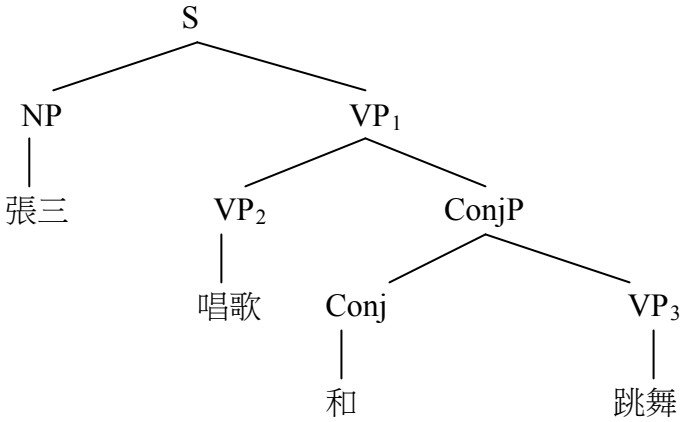
b. [[或是]]([[我去]])([[他去]]) = T　iff
c. [λP: P∈D_s.λQ: Q∈D_s.P = T or Q = T] ([[我去]])([[他去]]) = T　iff
d. λQ: Q∈D_s.[[我去]]= T or Q = T] ([[他去]])= T　iff
e. [[我去]]= T or [[他去]] = T

有些連接詞不連接兩個句子，而是連接兩個動詞組或是形容詞組，如（35）中的『和』。

（35）張三唱歌和跳舞。

（35）的結構圖有點類似於（32），如例（36）。

（36）



在上例中，VP_1必須和主語名詞組組合成類別*t*的語意，所以VP_1一定是類別<*e,t*>。ConjP必須和類別為<*e,t*>的VP_2組合成類別也是<*e,t*>的VP_1的語意，所以ConjP的類別一定是<<*e,t*>,<*e,t*>>，從這個地方，我們就可以推論出Conj的語意類別是<<*e,t*>,<<*e,t*>,<*e,t*>>>。

那麼『和』的語意定義又為何呢？首先我們知道（35）這個句子的最後真假值條件如下：

（37）[[張三唱歌和跳舞]] = T iff Zhangsan sings and Zhangsan dances.

換句話說，主語名詞組的外延必須同時是兩個被連接的動詞組的論元，也就是說，我們需要把VP_1的語意定義如下：

（38）[[VP_1]] = [λx: x∈D_e. x sings and x dances]

接著我們來看ConjP的外延語意。ConjP的語意必須和VP_2的語意結合來產生VP_1的語意。根據函數的運用規則，這有兩種可能性，也就是VP_2當函數，ConjP當論元，或是ConjP當函數，VP_2當論元。前者不可能，因為VP_2這個函數要求它的輸入項論元是類別

*e*的個體，但是ConjP的語意無論如何也不可能是個體，所以ConjP一定是當函數，以類別為<*e,t*>的VP_2當ConjP的論元，並產生輸出結果為<*e,t*>的VP_1。換句話說ConjP的語意類別必須是<<*e,t*>,<*e,t*>>的表達式，並可定義如下：

（39）[[和跳舞]] = [λf: f∈$D_{<e,t>}$.[λx: x∈D_e. f(x) = T and x dances]]

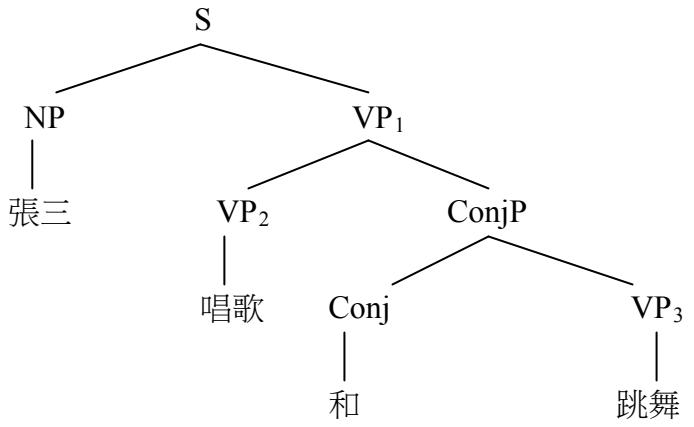
從（39）的結果，我們又可推論出『和』的語意，也就是，『和』和『跳舞』必須組合出（39）的結果，要得到這個結果，顯然『和』必須當函數，『跳舞』必須當論元，因此『和』的語意可以定義如下：

（39）a. [[和]] = [λg: g∈$D_{<e,t>}$.[λf: f∈$D_{<e,t>}$.[λx.:x∈D_e. f(x) =T and g(x) =T]]]

b. 語意類別： <<e,t>, <<e,t>, <e, t >>>

根據上面的這些結果，（36）這個結構圖的真假值條件就可運算如下：

（40） a.



b. [[S]] = T *iff* (by FA)
c. [[VP_1]]([[NP]]) = T *iff* (by NN*x2*, TN)
d. [[VP1]](Zhangsan) = T *iff* (by FA)
e. [[ConjP]]([[VP_2]])(Zhangsan) = T *iff* (by NN*x2*, TN)
f. [[ConjP]]([λx. x sings])(Zhangsan) = T *iff* (by FA)
g. [[Conj]]([[VP_3]])([λx. x sings])(Zhangsan) = T *iff* (by NN*x2*, TN)
h. [[Conj]]([λx. dances])([λy. y sings])(Zhangsan) = T *iff* (by TN)
i. [λ$g_{<et>}$ [λ$f_{<et>}$ [λz. f(z) = T and g(z) = T]]]
([λx. x dances])([λy. y sings])(Zhangsan) = T *iff* (by LC)
j. [λ$f_{<et>}$: [λz : f(z) = T and [λy : y dances](z) = T]]
([λy : y sings])(Zhangsan) = T *iff* (by LC)
k. [λz : [λx : x sings](z) = T and [λy : y dances](z) = T](Zhangsan) = T *iff* (by LC)

l. [λx : x laughs](Zhangsan) = T and [λy : y dances](Zhangsan) = T *iff*
m. Zhangsan sings and [λy : y dances](Zhangsan) = T *iff*
n. Zhangsan sings and Zhangsan dances

我們上面看了幾個例子，其論元的語意類別不是個體，而是真假值或是函數，往後我們會再討論更多非個體論元的例子。

習題 2: 請定義中文連接詞『並且』的詞彙意義。

習題 3: 中文的『和』可以連接兩個名詞組，如下面例句：

(i) a. 張三和李四離開了。

請運用自己的想像力盡可能定義例句（a）中『和』的詞彙意義嗎？

習題 4: 『沒』和『不』是中文的否定詞，可以否定一個動詞組或是形容詞組，如例句（ia）和（ib）。

(i) a. 張三沒來。
b. 張三不聰明。

請定義『沒』的詞彙意義，並運算（ia）句的真假值條件。形容詞的詞彙意義稍後會討論，讀者可先自行想像並設計『不』的詞彙意義。

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6. 語意上的病句

並不是任意字串組合起來的中文句子都是通順的句子，比方說，下面（41）的句子就是一個病句。

（41）*張三來了昨天。

（41）這個句子不好是因為中文的造句規則要求時間修飾語必須出現在動詞組的前面，如（42）。

（42）張三昨天來了。

這樣的規定是中文的造句規則所要求的，但就語意解釋而言，（41）應該還是個可以被理解的句子，它表達了和（42）相同的意思，比方說，學中文的外國人就可能說出（41）這樣的病句，但是本國人還是有可能可以理解，我們稱這樣的句子叫做句法上的病句。

可是有些句子，在句法層次上是沒問題的，但是整個句子卻沒辦法得到適當的語意解釋，我們稱這樣的句子為語意上的病句。請比較下面兩個句子：

（43）a. 他明天會來。
b. *他昨天會來。

（43a）和（43b）兩個句子的對比告訴我們，（43b）的不合語法可能不是句法因素，因為兩者的結構及單字的位置完全一樣，比較可能的原因是語意上的問題，因為表達未來的助動詞『會』要求動作發生在未來，但是時間副詞卻又要求動作發生在過去，因為這個語意衝突，（43b）就形成了一個語意上的病句。

同樣地，在下面(44)的例子裡，(44a)和(44b)的句法結構完全一樣，唯一的不同只在於謂語部分，一個用了動詞『死』，另一個用了動詞『枯』，可見(44a)的不合語法應當非句法因素造成，而是不同的動詞詞彙意義造成主謂語無法進行語意運算。

(44) a. *那棵樹都死了。
b. 那棵樹都枯了。

形式語意學理論為了那些句法上合乎語法，可是語意上卻無從解釋的句子設計了一條解釋規則如下：

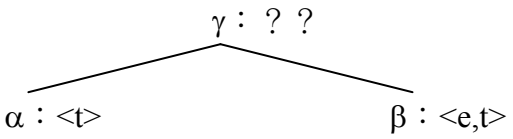
（45）詞組結構上的每一個節點都必須獲得一個語意解釋。

如何判定一個節點是否可以獲得語意解釋並判定為語意上的病句呢，其方法如下：

（46）a. 一個結構 X，如果無法進行語意運算，那麼結構 X 就是無法獲得語意解釋的結構。
b. 無法獲得語意解釋的結構就會造成語意上的病句。

什麼時候一個結構 X 會無法進行語意運算呢？常見的一個情形如下。假設有一個節點γ，其底下有兩個姊妹節點α與β，α的論元範域不是β的語意類別，而β的論元範域也不包含α的語意類別，因此α與β無法進行函數的運算，因此γ就是一個無法運算的節點，這種情形叫做類別的衝突（type mismatch）。一個假設性的例子如下：

（47） 結構：



例子：*張三住台北死了。　vs.　張三死了。

我們在此必須先提醒讀者，當函數的運用規則無法使用時或是有語意類別衝突時並不一定保證這個結構就無法獲得語意解釋，還要看整套語意解釋系統中是否存在著其他的語意解釋規則可以用來解釋我們所碰到的類別衝突結構，如果有其他的語意解釋規則可以用來解釋類別衝突的情形，那麼那個結構還是可以進行語意運算，並獲得一個語意解釋，我們日後會討論這樣的例子。

習題 5：請利用語意類別，舉出兩個類別衝突的情形。

習題 6: 請舉出兩個中文裡可能的語意病句。

第四章

名詞與名詞修飾語的語意

4.1 目前的字典

目前為止，我們人腦字典中所包含的單字，已經討論過專有名詞，兩種不及物動詞，及物動詞，以及連接詞『和』， 摘要如下：

- 專有名詞　　[[張三]] = Zhangsan
- 不及物動詞 1　[[逃跑]] = [λx_e. x runs away]
  不及物動詞 2　[[*是假的*]] = λP_t. P = F.
- 及物動詞　　[[喜歡]] = [λx_e.[λy_e. y likes x]]
- 連接詞　　[[和]] = [$\lambda g_{<e,t>}$.[$\lambda f_{<e,t>}$.[λx_e. f(x) =T and g(x) =T]]]

在這一章裡，我們接著要來討論另外兩種基本詞類的語意解釋，一個是普通名詞，一個是形容詞。

4.2 普通名詞的意義

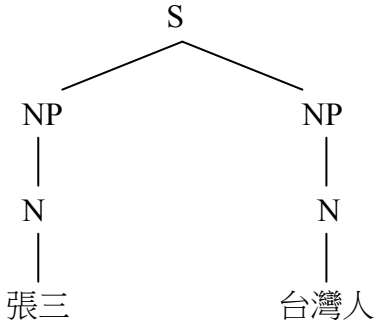
我們之前提到專有名詞的外延語意就是它所指稱的個體，所以專有名詞『張三』就是指稱張三那個人，可是一個語言中的名詞並非都是專有名詞，有些是普通名詞，普通名詞有些可數，有些不可數。普通名詞的意思到底是什麼？這是我們現在就要談的主題。

首先我們先來看下面的句子：

（1） 張三台灣人。

上面這個句子是由兩個名詞組所組成，主語名詞組是專有名詞『張三』，謂語部分則由一個普通名詞『台灣人』所構成，其結構如下：

（2）



現在我們來考慮這個結構應該如何做語意運算。如果專有名詞指稱類別 *e* 的個體這個假設是正確的，那麼名詞『台灣人』顯然不可能也是指稱類別 *e* 的個體，因為兩個在語意上都已經完整的東西，是無法做函數與論元的組合運算的，因此比較可能的假設是謂語名詞組『台灣人』是個類別<*e,t*>函數，如（3）所定義。

（3）a. [[台灣人]] = λx $_e$. x is a Taiwanese.
b. [[台灣人]] = λx $_e$. x was born in Taiwan.
c. [[台灣人]] = λx $_e$. x's nationality is Taiwan.

換句話說，以集合的觀點來看，『台灣人』的外延意義指的就是所有台灣人所構成的集合。在這個假設底下，（2）這個句子為真當且僅當張三這個個體是台灣人這個集合的成員之一，以 lambda 來做運算，其過程則如下：

（4）a. [[張三台灣人]] = T　iff
b. [[台灣人]]([[張三]]) = T　iff
c. [λx$_e$. x's nationality is Taiwan](Zhangsan) = T　iff
d. Zhangsan's nationality is Taiwan.

所以我們可以下結論說普通名詞的外延語意就是符合名詞所描述的個體的集合， 等同於類別為<*e,t*>的函數。

有關以普通名詞為謂語的句子，一個值得注意的問題是這類型的句子通常可以在謂語名詞組前加上繫詞『是』，如例句（5）。

（5）張三是台灣人。

加上『是』之後，整個句子的意思基本上沒什麼改變，也就是說（5）這個句子的真假值條件和（2）這個句子的真假值條件是一樣的，所以『是』這個詞彙並無太多實質的意義，實際上在世界上的很多語言，普通名詞當述語時，完全不需要藉助於繫詞，句子就可以成句，如下面俄文例句（6）。[8]

（6）*Moskva　gorod*
Moscow　city
'Moscow is a city.'

在我們的語意系統裡要如何呈現這類語意虛空（semantically vacuous）的詞彙意義呢？文獻上的一個想法是讓這類型的單字表達一個函數，當這個函數帶上一個論元之後，它的值（或是說結果）會是原來的那個論元，也就是說『是』根本不對真假值條件做出任

[8] 這個句子取自下面網址： http://wals.info/feature/description/120。

何貢獻，如（7）。

（7）[[是]] = $\lambda f_{<e,t>}$. f

有關例句（7）裡的lambda用法，我們先做些補充說明。在第三章介紹lambda時，我們所看見的 “λα.β”中的“β”通常是一個句子型態，如“λx_e. x runs away”中的“x runs away”，因為句子屬於語意類別*t*，此時lambda的讀法是：lambda函數帶上α論元後，會映入真值如果β這個句子所陳述的條件成立，否則會映入假值，如果β這個句子所陳述的條件不成立。但是β的型態未必一定是句子的型態，如果β的解讀是類似於一個名詞組，則lambda函數帶上α論元後，不會映入真或假，而是直接映入β，也就是β本身就是函數的值。[9]（7）中的函數就是第二種情形，（7）中的函數帶上f論元後，其值是原來的f，而不是真值或假值。

根據（7）對『是』所規範的意義，例句（5）的語意運算如下：

（8）a. [[張三是台灣人]] = T　iff
b. [[是台灣人]]([[張三]]) = T　iff
c. [[是]]([[台灣人]])(Zhangsan) = T　iff
d. ([$\lambda f_{<e,t>}$. f](λx_e. x’s nationality is Taiwan))(Zhangsan) = T　iff
e. [λx_e. x’s nationality is Taiwan)](Zhangsan) = T　iff
f. Zhangsan’s nationality is Taiwan

有關中文普通名詞的用法，有兩點尚須注意，第一，和一些語言不太一樣，普通名詞不總是能單獨使用來當述語，如例句（9）裡的『是』就不能省略。

（9）a. 這*(是)書。
b. 台北*（是）城市。

至於何時可以不用『是』，何時必須使用『是』是個很複雜的問題，我們不在這裡討論。

另外一個要提醒讀者注意的是普通名詞也有類似於專有名詞的用法，如下面例句（10a）裡的台灣人或是（10b）裡的『熊貓』。

（10）a. 台灣人勤奮工作。
b. 雄貓快絕種了。

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[9] 以下是Heim & Kratzer 對 lambda解讀的說明：

Read “[λα: ϕ. γ” as either (i) or (ii), whichever makes sense.
(i) “the function which maps every α such that ϕ to γ”
(ii) “the function which maps every α such that ϕ to 1, if γ, and to 0 otherwise”

請參看 Heim, I & Kratzer, A, *Semantics in Generative Grammar* (Oxford, Black Publishers Ltd, 1998), p. 37。

從第三章的討論裡，我們知道，動詞組的語意類別應該是<*e,t*>，如此才能與指稱個體的主語名詞組作函數運算，因此(10a)和(10b)中的名詞『台灣人』與『熊貓』應該指稱個體，但是指稱什麼樣的個體呢?先看例句(10b)。例句（10b）中的動詞『絕種』只能運用在動物的種類上，因為只有種類才能絕種，所以（10b）中的名詞『雄貓』是把雄貓整體當作一個動物的種類來看，意思是『雄貓這種動物』的意思，可見普通名詞有時候必須分析成指稱種類，此時的普通名詞可以看成是種類的專名，和一般的專有名詞很類似。但是種類是什麼意思呢？種類專名指稱什麼呢?我們可以說種類是由所有構成那個種類的個體所組成，因此種類可以視為一種最大個體，其中的次個體都是符合種類所描述的個體，在這個分析底下，『雄貓』這個種類專名的意義也可以當作類別*e*來看待。[10]

那麼要如何呈現種類專名的語意呢？剛剛說過，一個方式是把種類專名視為一個最大個體，比方說，假設在一個世界裡，共有三隻熊貓，a, b 和 c，那麼『雄貓』這個種類專名就是由 a, b, c 加合起來所構成的最大個體。我們用符號'⊕'來表示加合的概念，在這個概念底下，『雄貓』的外延意義即可呈現如（11）：

（11） [[雄貓]] = a⊕b⊕c

然而我們知道，種類底下的個體其實非常多，因此實際上我們不太可能以（11）的型態來表示種類的指稱，必須以一種比較概化的方式來表達，底下我們就來討論如何表達。

首先，我們利用加合概念來討論一下所謂的複數概念，並以英文為例。英文普通名詞分為單數與複數，如 'book'及'books'的區別。我們之前所談到的普通名詞的外延基本上是針對單數來討論的，複數概念的外延要如何分析及呈現呢？加合的概念可以幫助我們。假設名詞'book'的外延是 a, b, c 三個原子個體（atomic individual），那麼複數名詞'books'的外延就可以用 'book'的外延做基礎來對原子個體進行加合，如下面例句。

（12）[[book]] = {a, b, c}
（13）[[books]] = {a⊕b, b⊕c, a⊕c, a⊕b⊕c}

用 lambda 的方式來表達，'books'的外延可以表示如下：

（14）[[books]] =λx[x is not an atomic book and for all y, y is part of x, and y is atomic, then y is a book.]

中文是個單複數並無構詞區分的語言，所以同一個名詞，可以是單數，也可以是複數，如（15）中的『書』可以是一本書也可以是一本以上的書。

（15）我買了書了。

[10] Carlson, G, *Reference to Kinds in English* (New York/London, Garland Publishing, 1980).

要解釋這個現象，一個方法是把中文的名詞分析成在數上面為中性的名詞 (請參考（Wilhelm 2008）。

當一個名詞的指稱物具有清楚分離的最小原子個體（atomic discrete entities）時，這樣的名詞就是可數名詞，比如說『汽車』是可數名詞，因為一部汽車的部分就不再構成汽車。另一方面，有些名詞並無清楚分離的最小個體，而是具有同質性的部份整體結構（homogeneous part-whole structure），如『水』、『牛奶』等，比如從水中舀出部分，不管多寡，依舊稱之為水，此類名詞就是不可數名詞。[11]

之前我們普通（可數）名詞的外延指的都是單數的個體，現在如果要分析成在數上面為中性的名詞，並以符號"*"表示中性，那麼普通可數名詞的外延就可以是單數個體，也可以是複數個體。舉一個例子，假設有三個獨立的最小個體 *a*, *b* 和 *c*，三個個體都是學生，那麼在數上面為中性的學生的外延就是（16）。

（16）[[*學生]] = {a, b, c, a⊕b, a⊕c, b⊕c, a⊕b⊕c}

（16）中，符號'⊕'表示把不同個體連結為複數個體的加合運符，其所架構起來的結構是一個 complete atomic join semilattices。

不可數名詞的情形，和可數名詞完全一致，只不過運符'⊕'所連結的是非原子個體，而是同質性結構的任一部分，因此不可數名詞的外延就構成一個complete non-atomic join semilattices。[12]

在上面的假設底下，中文普通名詞的外延可以定義如下。

（17）a. [[*書]] = λx[for all y, y is part of x, and y is atomic, then y is a book]
b. [[*水]] = λx[for all y, y is part of x, and y is non-atomic, then y is water]

因為不像（14）中有關複數名詞的定義，把原子個體排除在外延指稱外，（17a）中『書』的外延既可包含原子個體 ，也可包含非原子個體，因為每個原子個體也是自己的部分。

現在回頭來分析種類專名的指稱，我們剛剛提到，種類可以分析成由所有符合該種類描述的個體所組成的最大個體，換句話說，我們是從複數指稱或是中性指稱的集合裡挑出最大的那個個體即可，以"雄貓"為例，其指稱意義可以分析如下：

（18） [[雄貓$_k$]] = ιx.[x∈[[*雄貓]] and for all y, y∈[[*雄貓]]，那麼y⊆x]

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[11] 請參考下列文獻Cheng, Lisa Lai-Shen, & Rint Sybesma, "Bare and not-so-bare nouns and the structure of NP," Linguistic Inquiry 30 (1999), pp.509–542. Doetjes, J, *Quantifiers and Selection; On the Distribution of Quantifying Expressions in French, Dutch and English* (PhD dissertation, Leiden University, 1997). Wilhelm, Andrea, "Bare nouns and number in Dëne Sułiné, " Natural Language Semantics 16 (2008), pp. 39–68.

[12] 請參考 Link, Godehard, "The Logical Analysis o f Plurals and Mass Terms: A Lattice-theoretical Approach," in: R Bäuerle et al (eds.), *Meaning, Use, and Interpretation of Language* (Berlin, de Gruyter, 1983), 302-323. Link, Godehard, Algebraic Semantics in Language and Philosophy: CSLI lecture notes No. 74 (Stanford, Calif., CSLI Publications, 1998).

在（18）中，我們用下標 k 來表示種類專名。符號“ι”的意義類似於英文的“the”的意思，所以“ιx”意思差不多等於“那個 x”，（18）的整體意義就等於“那個屬於[[*雄貓]]的最大 x”。

習題 1：請運算下面例子的真假值條件。

(i) 熊貓絕種。

4.3 形容詞的意義

討論完普通名詞，接著我們來探索一下形容詞的意義。和不及物動詞一樣，形容詞通常需帶上一個主語名詞組論元，意義才會完整。底下是幾個帶有形容詞謂語的例子：

（19）a. 張三很聰明。
b. 張三不聰明。
c. 張三聰明嗎？
d. 張三比李四聰明。
e. 張三聰明，李四不聰明。

中文的形容詞有一個很特殊的現象，也就是，當形容詞出現在肯定直述句時，如例句（19a），『很』一定要出現，有人認為這個『很』是不具意義的，這個想法似乎有些道理，因為當形容詞出現在其他語境，如否定句，疑問句，條件句，比較句，或是對比句，『很』都是不需要的，所以中文的形容詞的確可以單獨用來當作謂語。在這個假設底下，形容詞的語意或許和不及物動詞的語意差距不大，因為都可視為一元述語，如例句（20）所顯示：

（20）$[[聰明]] = \lambda x_e.$ x is smart.

可是『很』該怎麼處理呢？一個辦法就是把『很』視為語意虛空（semantically vacuous）的字，它帶上一個類別為<*e,t*>的形容詞，但是語意上還是會回歸為那個形容詞的語意，就像我們上面所討論到的『是』。

（21）$[[很]] = \lambda f_{<e,t>}.$ f

這樣子，（19a）這個句子的真假值條件就可運算如下：

（22）a. [[張三很聰明]] = T　iff

b. [[很聰明]]([[張三]]) = T　iff

c. [[很]]([[聰明]])(Zhangsan) = T　iff

d. [[λf: f∈$D_{<e,t>}$. f](λx: x∈D_e. x is smart.)](Zhangsan) = T　iff

e. [λx: x∈D_e. x is smart.] (Zhangsan) = T　iff

f. Zhangsan is smart.

思考問題：如果說『很』和『是』都是語意虛空的字，那麼為何需要這些字出現在句子裡呢?是句法上的理由造成的嗎?還是這些字根本不是語意虛空的字，而是有我們沒有發現出來的語意呢?

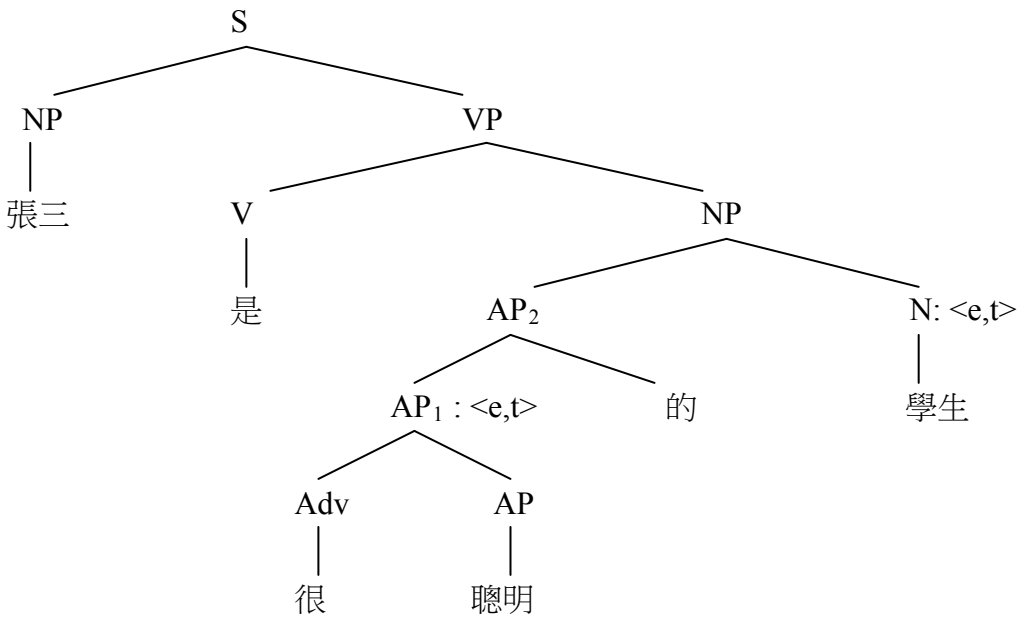
4.4 形容詞修飾名詞的語意

形容詞（組）除可當作述語來使用外，在句法上也可以用來修飾名詞，形成複雜名詞組，如例句（23）。

（23）張三是[$_{NP}$[$_{AP}$很聰明的][$_{N}$學生]]

當形容詞（組）修飾名詞時，通常會再加上虛詞『的』。我們要如何運算形容詞修飾名詞的語意呢？底下是形容詞組修飾名詞的結構圖：

（24）



就語意上而言，（24）這個句子的意思是說張三是個學生而且張三很聰明，因此張三同

時必須滿足『很聰明』及『學生』兩個特質，要得到這個結果，（24）中的名詞組 NP 必須具備下面（25）的語意。

（25）[[很聰明的學生]] = λx_e.x is smart and x is a student

假設如我們之前的討論，聯繫詞『是』是個語意虛空的詞彙，那麼 NP 的語意直接運用到主語名詞組就可以得到我們想要的結果，現在問題是，我們要如何從（24）的結構去得到（25）的語意。

如果我們堅持函數的運用規則是語意運算的最基本原則，那麼NP底下的AP_2及N，就勢必有一個要當函數，另一個要當論元。N可能是函數嗎？不太可能，因為它要求一個類別*e*的個體當論元，但是AP_2的外延語意似乎不可能是個體。那麼有可能AP_2當函數，N當論元嗎？這似乎是可能的，如果我們賦予『的』一個適當的語意，也就是，我們讓『的』先帶上AP_1當論元，其結果再以N當論元，然後輸出（25）的結果。底下就是一個可以讓我們得到上述結果的一個可能分析：

（26）[[的]] = $\lambda f_{<e,t>}.\lambda g_{<e,t>}.\lambda x.f(x) = 1$ and $g(x) = 1$

很有趣的，這樣的一個『的』，其詞彙意義和我們在第三章所討論的連接詞『而且』的意義竟然是一樣的，『的』是否真具有類似於連接詞的功能是一個值得探究的問題。

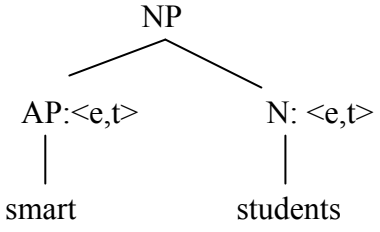
另外一個解決的辦法是將『的』分析成語意虛空的詞彙。要討論這個辦法之前，我們先回顧一下英文分析形容詞修飾名詞的情形。不像中文，英文的形容詞要修飾名詞時，是直接修飾，而無須再透過其他聯繫詞彙，如（27）中的『smart students』。

（27）a. They are smart.

b. They are students.

c. They are [smart students].

d.



（27a）和（27b）的例子告訴我們『smart』和『students』都可以直接當作述語使用，所以語意類別都是<*e,t*>，如（27d）所顯示。現在問題來了，兩個類別都是<*e,t*>的姊妹節點顯然無法使用函數的運算規則來做語意合成，這個情形，根據詞組結構上的每一個節點都必須獲得一個語意解釋這個原則，（27c）應該被判定為語意上的病句，但它卻是一個好的句子。為了解釋這類型的例句，Heim & Kratzer (1998)提議，除了函數的運算規則這個最基本的語意合成規則外，整個語意解釋系統裡還存在著其他的語意解釋規

則，其中的一條叫做述語修飾規則（Predicate Modification），定義如下：

（28）述語修飾規則

如果γ是個分叉節點，底下有兩個節點α與β，而且α與β的語意類別都是<e,t>，那麼：

$[[\gamma]] = [\lambda x: x \in D_e.[[\alpha]](x) = T \text{ and } [[\beta]](x) = T]$

根據這條述語解釋規則，『smart students』的語意解釋就可運算如下：

（29）[[smart students]]

$= \lambda x: x \in D_e.[[\lambda y.\ y \text{ is smart}]](x) = T \text{ and } [[\lambda z.\ z \text{ are students}]](x) = T$

$= \lambda x.\ x \text{ is smart and } x \text{ is a student}$

現在回來我們的中文例句（24）。有沒有可能中文的例句（24）也是透過述語的修飾規則來解釋『聰明的學生』的語意呢？這應該是可能的，如果『的』是個完完全全語意虛空的字，如（30）的定義。

（30）$[[的]] = \lambda f_{<e,t>}.\ f$

根據（30）的定義，[[聰明的]] = [[聰明]]，所以（24）中名詞組 NP 的語意運算方式和英文的（29）就很雷同了。

其他類似的形容詞修飾名詞的例子如下：

（30）a. 紅色的衣服

b. 女性（的）立法委員

c. 快樂的小孩

上面這些例子都可以透過對等連接詞‘and’，也就是(述語修飾規則)，來獲得交集的成員，比如『紅色的衣服』表示的是紅色的東西和衣服這樣的東西的交集。

我們上面提供了兩個解決中文形容詞修飾名詞時的語意運算方式，但我們並不想下結論哪一個方式才是正確的，因為我們的目的是讓讀者體會作中文邏輯語意分析的方法，而不是要對現象下一最終結論，其實很有可能兩個方式都是不正確的也有可能。

另外一個要思索的問題是，是不是所有的形容詞修飾名詞的語意解釋都是透過述語修飾規則來解釋呢？讓我們來考慮下面的句子。

（31）a. 張三是有名的語言學家。

b. Jumbo 是隻小象。

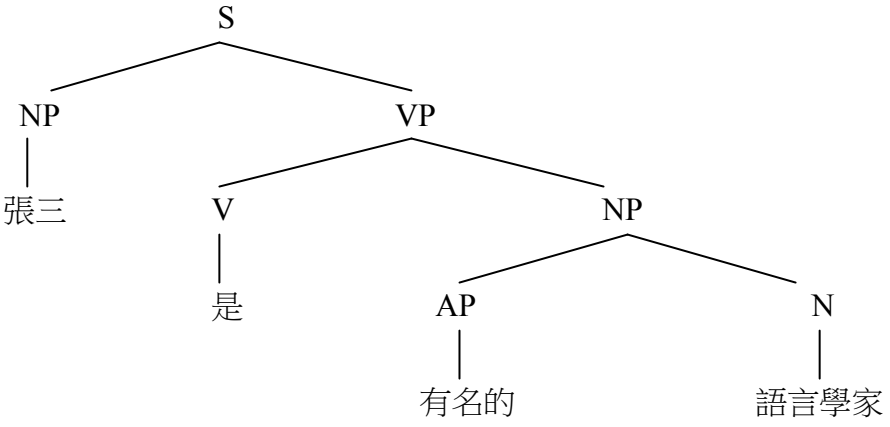
『張三是有名的語言學家』表示的是不是“張三很有名而且張三是個語言學家”的意思呢？看起來好像是，但是這樣的詮釋或許有問題，『張三是個很有名的語言學家』這個句子其實不保證大多數人認識他，而是作為一個語言學家，張三是有名的，可能大部分的語言學家都認識他，可是普羅大眾就不一定認識他，還有張三的名氣可能僅止於語言學的研究，其他方面，比方說就算他很會彈鋼琴，也可能沒有人知道他的琴藝。同樣的，當我們說『Jumbo 是隻小象』時，他的意思似乎也不是“Jumbo 是隻象，而且 Jumbo 很小”的意思，畢竟只要是一隻象，它的體積一定是很大的，而且比一隻大螞蟻的體積還不知道要大上多少倍，所以說『Jumbo 是隻小象』這個句子，Jumbo 之所以小是針對於象這種動物而言算小，但對於其他動物就未必是小，所以自然語言中許多形容詞的意義不是絕對的，而是相對於它所修飾的名詞的範圍才能決定的，這樣的形容詞叫做相對形容詞。

相對形容詞的意義要如何表達呢？一個方法是讓他們的語意類別為<<*e,t*>,<*e,t*>>，讓相對形容詞帶上另一個類別為<*e,t*>的名詞當論元，並且以這個名詞所指稱的個體為比較的群體，如（32）。

（32）a. [[有名的]] = [$\lambda f_{<e,t>}$.[λx. x is above the average fame for the entities
in {y: f(y) = T}]]
b. [[小]] = [$\lambda f_{<e,t>}$.[λx. x is below the average size for the entities
in {y: f(y) = T}]]

以下是（31a）的示範語意運算：

（33）a.



b. [[(33a)]] = T iff (by FA, NN, TN)
c. [[VP]](Zhangsan) = T iff (by FA, NN)
d. [[是]]([[有名的語言學家]])(Zhangsan) = T (by TN)
e. ([[有名的語言學家]] = [[有名的]]([[語言學家]]) (by FA, LC)
f. [[有名的]]([[語言學家]])
= [$\lambda f_{<e,t>}$.[λx. x is above the average fame for the entities

in {y: f(y) = T}]](λx.x is a linguist)

= [λx. x is above the average fame for the entities in {y: [λx.x is a linguist(y)] = T}]

= [λx. x is above the average fame for the entities in {y: y is a linguist}]

g. [[是有名的語言學家]] = [[是]]([[有名的語言學家]])

= [$\lambda f_{<e,t>}$.f](λx. x is above the average fame for the entities in {y: y is a linguist})

= [λx. x is above the average fame for the entities in {y: y is a linguist}]

h. [[是]]([[有名的語言學家]])(Zhangsan) = T iff

i. Zhangsan is above the average fame for the entities in {y: y is a linguist}.

絕對形容詞的意義和相對形容詞的意義是不同的，可以從（30）的例子做一比較即可判斷。『紅色的衣服』的意思絕對不是相對於衣服而言，某件衣服是紅色的，而是說某樣東西是紅色的而且那樣東西是衣服，『女性的立法委員』也決不是相對於立法委員，某個人是女性的，而是說某個人是女性，而且那個人是立法委員，所以絕對形容詞（有時亦稱為交集性形容詞 intersective adjectives）與相對形容詞（有時稱為非交集性形容詞 non-intersective adjectives）的區分的確有其必要性。

習題 2：如果『有名』和『小』這類型的相對形容詞的語意類別是<<*e,t*>,<*e,t*>>，那麼要如何解釋他們也可當謂語使用這個事實呢？

（i）a. 這隻象很小。

b. 張三很有名。

習題 3: 請考慮下面的例子：

(i) a. 陳水扁是前任總統。

b. *陳水扁（是）前任。

假定『前任』是形容詞，上面的例句告訴我們什麼？

4.5 數量詞修飾名詞

中文的普通名詞也可以接受數量詞修飾，如下面例句（34）：

（34）一個麵包、兩本小說、三枝筆、四張紙

帶有數量詞的名詞組要如何運算他們的語意呢？要回答這個問題，首先我們先來討論下面這個句子的語意。

（35）我買了書。

（35）這個句子中的賓語名詞『書』，可以是單數也可以是複數，要解釋這個現象，一個方法是如我們之前所討論的，把中文的名詞分析成在數上面為中性（number-neutral）的名詞 (請參考（Wilhelm 2008）。

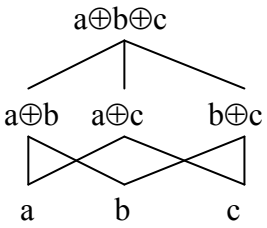
當一個名詞的指稱物具有清楚分離的最小原子個體（atomic discrete entities）時，這樣的名詞就是可數名詞，比如說『汽車』是可數名詞，因為一部汽車的部分就不再構成汽車。另一方面，有些名詞並無清楚分離的最小個體，而是具有同質性的部份整體結構（homogeneous part-whole structure），如『水』、『牛奶』等，比如從水中舀出部分，不管多寡，依舊稱之為水，此類名詞就是不可數名詞。[13]

之前我們普通（可數）名詞的外延指的都是單數的個體，現在如果要分析成在數上面為中性的名詞，那麼普通可數名詞的外延就可以是單數個體，也可以是複數個體。再舉一次例子，假設有三個獨立的最小個體 *a*, *b* 和 *c*，三個個體都是學生，那麼在數上面為中性的學生的外延就是（36）。

（36）[[學生]] = {a, b, c, a⊕b, a⊕c, b⊕c, a⊕b⊕c}

（36）中，符號‘⊕’表示把不同個體連結為複數個體的加合運符，其所架構起來的結構是一個 complete atomic join semilattices。

（ ）



不可數名詞的情形，和可數名詞完全一致，只不過運符‘⊕’所連結的是非原子個體，而是同質性結構的任一部分，因此不可數名詞的外延就構成一個complete non-atomic join semilattices。[14]

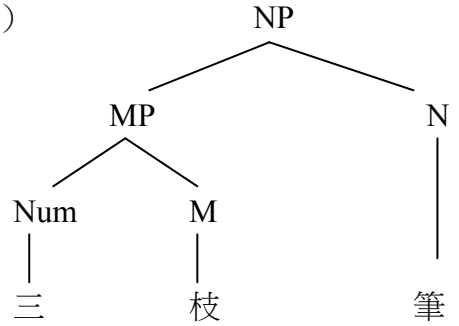
中文的可數名詞或是不可數名詞，一旦有數詞修飾，就必須帶上量詞，對可數名詞而言，除了量詞『個』或許不提供分離的最小個體的外在具體資訊，比方說東西是圓的，長的還是方的等，大部分的量詞都提供了一個最小原子個體外在形式的指稱名字，這個

[13] 請參考Cheng and Sybesma (1999), Doetjes (1997), Wilhelm (2008)。
[14] 請參考Link (1983, 1998)。

名字就是量詞。而不可數名詞，因為並沒有最小原子個體，所以一定要藉由量詞如『瓶』、『杯』、『碗』等才知道你要怎樣來計數，所以量詞實際上是透視計數的手段。

為了方便起見，讓我們假設中文的數詞和量詞形成一個 MP 詞組（Measure Phrase），如下圖：

（37）



現在我們必須知道數詞以及量詞的意義，以便組合整個名詞組的意義。數詞的外延指稱就是它所指稱的數字，這是很合理的基本假設，數詞的語意類別我們叫做類別 *n*。普通可數名詞的類別依舊是類別<*e,t*>，只不過指稱的集合由完全的原子個體變成為在數上為中性的集合，也就是包含了原子個體及由原子個體加合所得的複數個體，很顯然地，一個類別為 n 的數字，和一個類別為<e,t>的名詞，是無法自然組合的，因為存在著類別的衝突，量詞因此扮演著一個重要的語意連結功能以及計數的手段，來讓數詞及名詞可以連結起來。

量詞的語意可以定義如下：[15]

（38）[[量詞]] = $\lambda n_n.\lambda P_{<e,t>}.\lambda x[P(x) \& OU(x) = n]$, where OU is a predicate meaning 'object unit'.

根據上面量詞的語意，量詞首先必須先帶上一個數詞當論元，接著再帶上一個類別為<*e,t*>的普通名詞為論元，這些要求和（37）的句法結構圖是互相對應的，
而其輸出結果則是另一個類別為<*e,t*>的表達式，要求*x*必須是一個*P*，而且*x*的原子個體單位數是*n*，按照這個定義，（37）的語意運算如下：

（39）[[(37)]]

$= \lambda n{:}n \in D_n.\lambda P{:}\ P \in D_{<e,t>}.\lambda x[P(x) \& OU_{BRANCH}(x) = n]([[三]])([[筆]])$

$= \lambda P{:}\ P \in D_{<e,t>}.\lambda x[P(x) \& OU_{BRANCH}(x) = 3]$ (λx. x are pens)

$= \lambda x[x \text{ are pens} \& OU_{BRANCH}(x) = 3]$

（39）最後一行的意思，以集合的觀點來說明，就等同於一個集合，這個集合裡的成員*x*全部是筆，計量方式為『枝』，而且x的數目等於3，換句話說，(39)的這個集合裡的每

[15] 此定義，請參考Doetjes (1997, 31)

個成員都是由三枝筆所構成的複數個體。

問題 1：上文提到一個類別為n的數字，和一個類別為<e,t>的名詞，是無法自然組合的，因為存在著類別的衝突，所以中文需要透過量詞來做連結，以便計數，可是英文的數詞卻可以直接修飾名詞，如 'three books'，'two students'，請思考這是為什麼。

4.6 有定名詞組的語意

要討論有定名詞組的意思前，首先我們必須瞭解『有定』（definite）是什麼意思？『有定』是和『無定』（indefinite）做對比的。當說話者和聽話者雙方都知道或是可由語境線索去獨一無二地指認一個名詞組的外延指稱時，那個名詞組就稱為有定名詞組，但若只有說話者自己知道或是可以指認名詞組的外延指稱，而聽話者不行，或是兩者都無法指認指稱對象時，那個名詞組就是無定名詞組。

英文有定與無定的區分，是用冠詞來區分的，如果名詞組是有定的，就用定冠詞'the'修飾，如果是無定，就用無定冠詞'a(n)'，如例句（41a）和（41b）。

（41）a. I saw the man.
b. I saw a man.

中文並沒有相對應於英文的定冠詞'the'，而是使用指示詞'那'或'這'，無定用法則可使用數量詞，如例句（42）。

（42）a. 我看見那個人了。
b. 我看見一個人。

有定名詞組的指稱對象如果是單數，則數詞『一』可以省略，如上面例句（42a），有時候，甚至連量詞也可以被省略，如（43）中的名詞組『這孩子』。

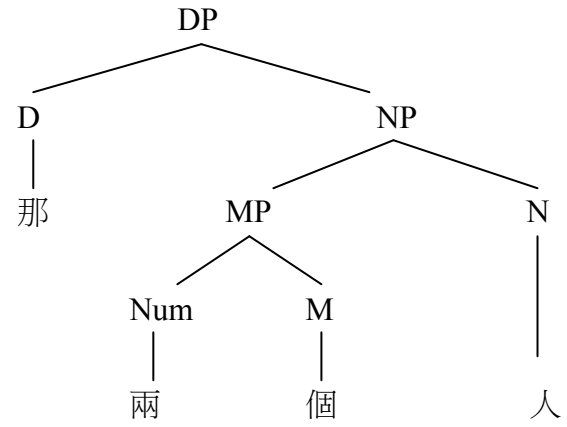
（43）我很喜歡這孩子。

但若是二以上的數詞就不能省略，如（43）。

（43）我看見那兩個人了。

我們假設有定名詞組的結構如下：

（44）



我們已經知道數量詞修飾名詞的語意如何做運算，所以我們只要再知道指示詞『那』的語意，就可以做整個有定名詞組的語意運算了。

我們上面提到要瞭解有定名詞組語意的一個重要部分是『獨一無二』的解釋，什麼是獨一無二？我們舉一個例子來說明。假設在我們系館的東側和西側各有一個樓梯，你我也都知道有這兩個樓梯，所以那兩個樓梯對我們而言是有定的，可是如果在談話時，我跟你說下面（45）這個句子，

（45）我們系館那個樓梯壞了。

顯然你會無法理解我講的是哪一個樓梯，因為還有另外一個樓梯存在，所以在上面那個語境裡，『那個樓梯』其實是無法指稱任何物體的。

或是說假設交大人社二館並沒有任何電梯，此時如果你說出（46）這個句子，

（46）人社二館那個電梯壞了。

『那個電梯』同樣地無法指稱任何個體，無法指稱的原因其實很簡單，也就是『（個）電梯』或是『（個）樓梯』所代表的函數，不在『那』的範域裡，因此『那』的語意無法運作在他們身上。

根據上面的討論，『那』的語意就可以定義如下：

（47）[[那]] = [λf: f∈$D_{<e,t>}$ and there is exactly one x such that f(x) = 1. the unique y such that f(y) = 1]

（47）的意思是說，『那』必須帶上一個語意類別為<*e,t*>的詞組當論元，而且限制這個類別為<*e,t*>的函數 *f*，其外延只包含了一個獨一無二的 *x*，如果有這樣的 *x* 存在的話，那麼指示詞『那』帶上這樣的 *f* 以後，其輸出結果就是一個獨一無二的個體 *y*，而且 *y* 是滿足 *f* 所描述的個體。所以『那』的語意類別為<<*e,t*>,*e*>>。根據（47）有關『那』

的語意解釋，（46）將得不到任何語意解釋，因為人社二館裡並沒有一個獨一無二的電梯存在。

上面有關『那』的語意，表示『那』是一個從$D_{<e,t>}$到D_e的函數，也就是說『那』的論元範域（Domain）是所有<e,t>類型的函數，然事實並非如此，並非所有的$D_{<e,t>}$裡的成員都可以當作『那』的論元，而是只有部分<e,t>函數可以，也就是只有那些具有獨一無二成員的<e,t> 函數才可以，所以『那』所代表的函數其實是一個部分函數（Partial function），自然語言的函數多數為部分函數。

部分函數定義如下：

（48）部分函數的定義

一個函數 f 是從 X 映射到 Y 的部分函數，如果 f 的範域（domain）只是 X 的子集，而值是 Y 的子集。

我們在這裡也要特別說明，如果一個名詞組無法被我們的語意系統賦予一個語意解釋，那麼包含這個名詞組的更大詞組，比方說動詞組或是句子也就無法得到任何的語意解釋。

另外一點要注意的是，雖然指示詞『那』要求它的論元的外延指稱是獨一無二的（也就是'there is exactly one x such that f(x) = 1'這個部分），但是現實上，其實少有名詞的外延指稱是只有一個個體的，比方說『學生』這個名詞，世界上不知道有多少個學生，可是實際上我們卻常常使用像『那個學生』這樣的名詞組，而且可以完全理解它的意思，這是為什麼呢？要回答這個問題，我們必須稍微解釋一下語境（context）的概念，在大部分的談話語境下，我們所談論的個體，其實都只是一些我們所關心的或是在談論的個體，以『學生』這個名詞而言，當我使用這個名詞時，我可能主要是關心自己系上的學生，而不是外系的學生，不是所有交通大學的學生，或是全台灣的學生，或是全世界的學生，這個由語境所限制的相關個體的集合，讓我們稱之為 C（contextually relevant entities），當我們使用像『那個學生』或是『那兩個學生』這樣的名詞組時，我們所指的其實是語境 C 裡滿足『一個學生』或是『兩個學生』這樣描述的獨一無二的個體。所以即使世界上有學多學生都滿足『一個學生』或是『兩個學生』的描述，但那些學生並不是語境 C 的成員，所以並不妨礙我們使用『那個學生』或是『那兩個學生』，日後我們會再對語境做更深入的探討以及如何精確地將語境納入我們的形式語言。

根據我們上面有關語境的討論，『那』的語意可以進一步更改如下，把語境也納入『那』的詞彙意義裡。

（49）[[那]] = [λf: f∈$D_{<e,t>}$ and there is exactly one x ∈ C such that f(x) = 1. the unique y such that f(y) = 1, where C is a contextually salient subset of D.[16]

[16] 這個定義，請參閱Heim and Kratzer (1998: 81)有關'the'的定義。

問題 1：根據（49）的語意，請試運算下面這個句子的語意解釋。

（i）張三讀那一本書。

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第五章

代名詞的語意解釋

5.1 代名詞與語境

名詞組裡的另外一個成員是代名詞。代名詞的語意解釋是什呢？我們來考慮一個實際帶有代名詞的句子，如例句（1）。

（1）他是張三的朋友。

想像你指著王小明並對聽話者說出上面（1）這個句子。顯然這個句子要為真的條件如下：

（2）[[他是張三的朋友]] = T iff Wang Xiaoming is Zhangsan's friend.

這個句子的真假值條件告訴我們，代名詞『他』在上面那個語境裡的意思是指王小明那個人，也就是，代名詞『他』似乎和專有名詞一樣是指某個個體。

我們知道專有名詞所指的個體是恆常不變的，如果王小明那個個體的名字叫做『王小明』，那麼不管說話者在什麼時候使用『王小明』這個名字，這個名字指的都是王小明那個人。

代名詞雖然也是指個體，但是它所指的個體卻因語境的不同而有不同的指稱。比方說，張三指著李四對你說（3）這個句子，那麼，代名詞『他』指的個體就是那個不抽煙的李四。

(3) 他不抽煙。

代名詞的指稱對象可以因語境的改變而改變，所以有些語言學家把代名詞分析為變項。代名詞的語意解釋，對於使用函數來做語意詮釋的語意學理論其實是個很大的挑戰，我們之前討論過，語意解釋，也就是符號'[[.]]'所代表的意義就是一個函數，而函數的最重要特質就是，同樣的一個輸入元，是不行有兩個輸出結果的，也就是不能有一對多的情形，換言之，下面的情形是不被允許的。

（4）[[他]] = Wang_Xiaoming 而且 [[他]] = 李四

所以代名詞的語意解釋對於我們目前的語意理論構成很大的一個挑戰，我們或許需要新的理論分析來幫助我們解決這個問題。

5.2 變項指派與代名詞所指

上一小節我們指出代名詞語意解釋的一個重要特質就是語境會影響它的指稱，因為代名詞可以因語境而有不同的指稱，所以一些語言學家就把代名詞稱之為變項。所以要如何讓我們的解釋函數，也就是符號‘[[.]]’的意義，如何反應語境對語意的影響，是我們必須要做的事。

讓我們暫時把語境這樣的資訊以一個特殊的上標*g*呈現在解釋函數上，標示為‘$[[.]]^g$’，我們把*g*稱之為變項指派（variable assignment），變項指派是從個體範域D_e裡抓出來的某個特殊個體。‘$[[.]]^g$’的意義如下：

（5）$[[XP]]^g$ = XP相對應於變項指派g的外延

現在讓我們初步設計代名詞的語意解釋規則如下：

（6）**代名詞的語意解釋規則（第一個版本）**

如果X是一個代名詞（他，他們，他的，等等），那麼$[[X]]^g$ = g。

舉例：(i) $[[他]]^{Wang\_Xiaoming}$ = Wang_Xiaoming

(ii) $[[他]]^{Lisi}$ = Lisi

代名詞語意解釋的基本精神就是代名詞的指稱對象由變項指派決定，看語境中的變項指派是哪個，代名詞的語意解釋就是指稱那個個體。

為了因應語意系統多了變項指派來決定代名詞的外延這樣的因素，非代名詞的部分也需要略做修正，因為語意解釋系統如果必須相對應於變項指派，那麼不只代名詞，而是所有的詞組的語意解釋也都會相對應於變項指派。然而非代名詞的語意解釋其實不仰賴變項指派來決定他們的外延，有沒有變項指派對於非代名詞的語意並沒有影響，因此語意理論架構裡就有了下面（7）這樣的規則來確保非代名詞的語意解釋和之前所討論的一樣。

（7）非代名詞的語意解釋協定

如果X不是一個代名詞，那麼$[[X]]^g$ = [[X]]

舉例： $[[逃跑]]^{Wang\_Xiaoming}$ = [[逃跑]] = [λx. x runs away]

$[[張三]]^{Lisi}$ = [[張三]] = Zhangsan

除了詞組的語意解釋，語意解釋規則本身原來並不相對應於變項指派，現在也都必須修改成相對應於變項指派。

（8） 語意解釋規則協定

a. 新的函數的運用規則 (FA)
讓*g*為任一變項指派。如果X是個分叉節點，底下有Y與Z兩個節點，而且$[[Y]]^g$是一個函數，且論元域包含$[[Z]]^g$，那麼$[[X]]^g = [[Y]]^g([[Z]]^g)$

b. 新非分叉節點的語意解釋規則 (NN)
讓*g*為任一變項指派。如果X節點沒有分叉，而Y是X的唯一兒女節點，那麼$[[X]]^g = [[Y]]^g$。

c. 新終端節點語意解釋規則 (TN)
讓*g*為任一變項指派。如果X是終端節點而且不是代名詞，那麼$[[X]]^g$(= [[X]])的語意解釋由字典中的詞彙意義決定。

上面這樣的一套語意解釋系統不僅可以讓我們計算帶有代名詞的句子的真假值條件，更重要的是利用上標 g 來代表語境中的部分資訊來幫助解釋某些詞組的語意解釋抓住了語境會影響語意這樣一個重要的語言事實。

下面是兩個例子用來試計算帶有代名詞句子的真假值。

（9）語境：我們正在談論李四。

a. $[[他抽煙]]^{Lisi}$ = T iff (by FA)
b. $[[VP]]^{Lisi}$ $([[他]]^{Lisi})$ = T iff (by NN, TN)
c. $[\lambda x_e$: x smokes$]([[他]]^{Lisi})$ = T iff (by 代名詞語意解釋規則)
d. $[\lambda x_e$: x smokes](Lisi) = T iff
e. Lisi smokes

（10）語境：我們正在談論王五。

a. $[[他抽煙]]^{Wangwu}$ = T iff (by FA)
b. $[[VP]]^{Wangwu}$ $([[他]]^{Wangwu})$ = T iff (by NN, TN)
c. $[\lambda x_e$: x smokes$]([[他]]^{Wangwu})$ = T iff (by 代名詞語意解釋規則)
d. $[\lambda x_e$: x smokes](Wangwu) = T iff
e. Lisi smokes

5.3 指標與函數型變項指派

同一個句子可能有兩個或以上的代名詞一起出現，而且指稱不同的人，如下面例句(11)。

（11）語境：在討論張三和李四，而張三討厭李四。
句子：他討厭他。
真假值條件：[[他討厭他]] = T iff Zhangsan hates Lisi

可是如果變項指派像我們之前所說的是一個個體，那麼同一個句子裡的所有代名詞就都只能指稱同一個個體了，如（12）所示：

（12）[[他討厭他]]^{Lisi} = T iff Lisi hates Lisi

這個結果顯然是不對的，因為我們要的結果是句子中的兩個代名詞指稱不同的人。

解決上述問題的一個辦法是採行句法學家有關名詞組的提案。衍生學派的句法理論主張每個名詞組都跟隨帶著一個指標，比方說用數字來表示，代名詞也不例外，具備有相同指標的名詞組代表他們指稱相同的人，而不同指標的名詞組則指稱不同的人，以下是幾個帶有指標的例子。

（13） a. 他$_1$討厭他$_2$。
b. 他$_1$喜歡他$_1$。[17]
c. 他$_{34}$愛上她$_{56}$。

可是有了指標，要如何幫助我們解決剛才所提到的問題呢？我們還是要從變項指派著手。之前我們將變項指派視為一個我們正在談論的個體，這樣的觀點現在必須略做修正。讓我們把變項指派視為一個函數，一個從自然數（或是指標）映入個體的函數，這個變項指派函數把語境裡哪個代名詞指稱語境裡的哪個個體透過指派方式很清楚地解釋清楚。

以下是幾個變項指派函數的例子：

（14）h = {<1,Zhangsan>}
j = {<1, Zhangsan>, <2, Lisi>}
w = {<34, Zhangsan>, <56, Mary>,<72,Wangwu>…}

這個新的變項指派函數做的事情實際上和之前的變項指派差不多一樣，它們是映入我們正在談論的個體的函數。

有了新的變項指派函數，我們的代名詞語意解釋規則也可以更新如下：

（15）代名詞語意解釋規則 [Heim & Kratzer (1998:111)]]
如果X是個帶有指標*n*的代名詞，*g*是個變項指派而且指標*n*在*g*的範域內，那麼[[X_n]]^g = g(n)。

我們舉幾個例子來解釋（15）的運作：

[17] 在標示的指標下，這個句子實際上是不合乎語法的句子，請讀者自行參閱和代名詞相關的約束理論，如Chomsky(1981)。

（16） a. $[[他_1]]^h$ = by代名詞語意解釋規則
h(1) = Zhangsan by (14)
b. $[[他_2]]^j$ = by代名詞語意解釋規則
j(2) = Lisi by (14)
c. $[[他_{72}]]^w$ = by代名詞語意解釋規則
w(72) = Wangwu by (14)
d. $[[他_{31}]]^w$ = ?? by代名詞語意解釋規則
W(23) = 無法定義，因為指標 23 不在 *w* 的範域。

習題 1: 假設語境中的變項指定如下: g = {<1, Zhangsan>, <3, Mary>, <4, Jack>}, 請運算下列例子的真假值條件:

(1) 她$_3$喜歡他$_4$。

第六章

關係子句

6 關係子句

所謂關係子句是指修飾名詞（組）的從屬子句，如（1）中的英文例句畫線粗體部分，或是（2）中的中文例句畫線粗體部分。

（1）a. John is a teacher **who is smart**.
　　b. Mary is a girl **who John likes**.
（2）a. 約翰是個**會罵人的**老師。
　　b. 瑪麗是個**約翰喜歡的**女孩。

因為中文關係子句和英文關係子句在結構上的差異，我們先來討論英文關係子句的語意運算。要運行關係子句的語意運算，我們必須了解關係子句的句法以及帶有關係子句的句子的真假值條件。下面就來討論這些問題。

6.1 英文關係子句的句法

英文的關係子句有兩個重要特點。第一、關係子句帶有關係代名詞。第二、句子內部有一空缺位。這兩個特點請看例（3）。

（3）Mary is a girl [who John likes ___]
　　關係代名詞　　空缺位

而且上述兩個特點互相依存。沒有關係代名詞的句子，是不可以有空缺的，如例句（4）。而有關係代名詞的句子則是一定要有空缺，如例句（5）。

（4）*John likes.
（5）*a girl **[who** John likes **her**]

那麼要如何表現關係代名詞和空缺之間的依存關係呢？一個主流的句法看法認為關係代名詞的原始位置始於空缺位置，是後來經過移動位置，才跑到關係子句的前頭，如下：

（6）Mary is a girl [who John likes ___]

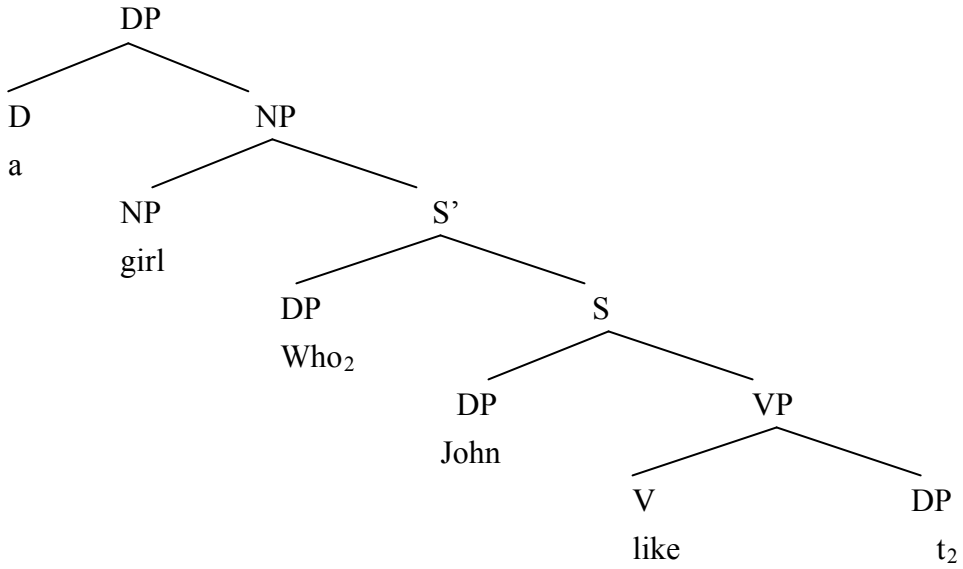
事實上，句法學家還甚至假設詞組移動位置時，會在原始位置留下一個所謂的痕跡（trace，以小寫字母 t 表示），如（7）：

（7）Mary is a girl [who John likes t]

更進一步的假設則是如同一般代名詞一樣，關係代名詞也是攜帶著一個指標，帶有指標的詞組移動位置時則留下了一個帶有相同指標的痕跡，如下圖：

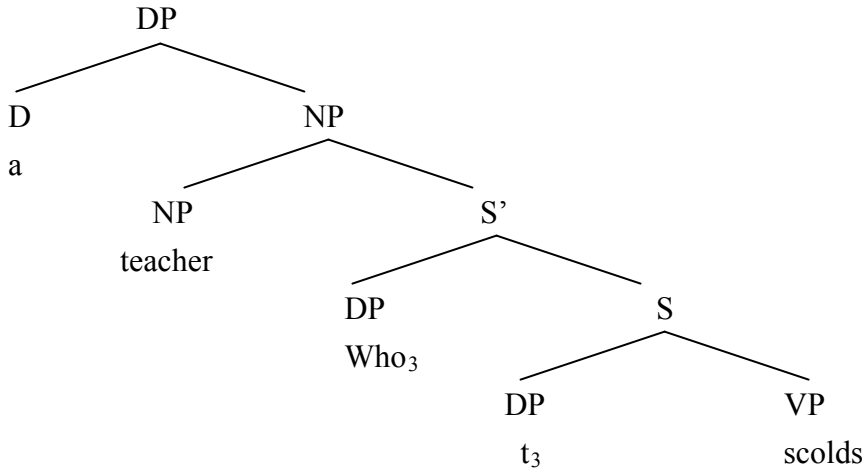
（8）Mary is a girl [who$_2$ John likes t$_2$]

（9）



在此必須提醒讀者，不僅是賓語位置的關係代名詞會留下痕跡，主語位置的關係代名詞也假設必須移位並且留下痕跡，如例句（10）。

（10）



6.2 英文關係子句的語意分析

在作語意分析的時候，我們往往都必須先知道一個句子的最終真假值條件是什麼，這部

分應該是很容易的，因為我們具有判斷某個句子在什麼樣的情況底下是真的句子，從這個地方我們就可以思索組成那個句子的單字及詞組如何分別對最終的真假值條件做出貢獻。

我們可以很容易判斷（9）和（10）這兩個句子具有如下的真假值條件。

（11）[[Mary is a girl who John likes]] = T iff Mary is a girl and John likes Mary.
（12）[[John is a teacher who is smart]] = T iff John is a teacher and John is smart.

在（11）和（12）中，無定名詞組“a girl who John likes”, “a teacher who is smart”在語意上是擔當述語的功能，就好像下面例句中的“a girl”及“a teacher”也是。

（13）a. Mary is a girl.
b. John is a teacher.

我們之前討論過，普通名詞的語意本身就是個述語(predicate)，而述語就是在語意上尚不完整的東西，它需要補上某些東西後，意思才會變完整，也就是類別為<e,t>函數的意思，以集合的角度來說，“girl”的意義或是外延就是所有是女生的那些個體的集合，“teacher”則是所有是老師的那些個體的集合。

（14）[[girl]] = [λx. x is a girl]
[[teacher]] = [λx. x is a teacher]

“girl”或是“teacher”的上述語意，應該可以直接帶上一個個體，然後獲得一個真假值。然而在（13）的例句裡，主語和普通名詞之間卻還存在著無定冠詞 “a”, 以及繫動詞 “is”，我們無法詳細地在這裡討論這兩個字，但是我們可簡略地說， “is”的出現是因為英文必須有一個動詞來表現時制的概念，除此之外，“is” 並無其他意思，而“a”則是在語法上用來標記可數的概念[18]，可能也沒有具體的語意，因此（13）中的“is”和“a”都可以分析成語意空虛的字，如下：

（15）[[is]] = $\lambda f_{<e,t>}$. f
[[a]] = $\lambda f_{<e,t>}$. f

現在回來關係子句的分析。根據我們對關係子句真假值條件的判斷、函數的運用規則，以及剛剛在（14）和（15）的討論，我們可以獲得如下語意運算：

（16）(i) [[Mary is a girl who John likes]] = T iff (by FA, NN, TN)

[18] 普通名詞可直接當述語，在複數普通名詞裡看得更清楚，如下例。

(i) They are teachers.

(ii) [[is a girl who John likes]](Mary) = T iff (by FA, NN, TN, LC)
(iii) [[girl who John likes]](Mary) = T iff (by (15))
(iv) Mary is a girl and John likes Mary.

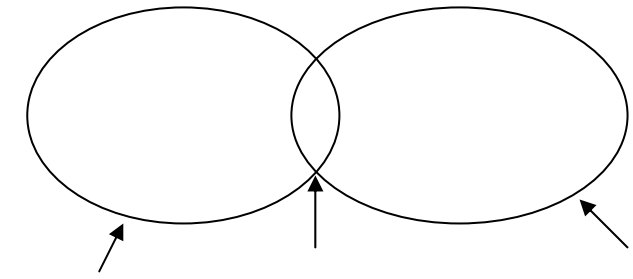
（17）(i) [[John is a teacher who is smart]] = T iff (by FA, NN, TN)
(ii) [[is a teacher who is smart]](John) = T iff (by FA, NN, TN)
(iii) [[teacher who is smart]](John) = T iff (by (15))
(iv) John is a teacher and John is smart

從上面最後一行的真假值條件，我們可以得到（18）和（19）的結論：

（18）[[girl who John likes]] = [λx. x is a girl and John likes x]
（19）[[teacher who is smart]] = [λx. x is a teacher and x is smart]

以集合的角度來說，（18）和（19）的意思就是把名詞所指稱的集合以及關係子句所指稱的集合交集起來，如下圖。

（20）



如果我們的語意系統可以讓我們得到（20）這種交集的語意，我們就可以解釋帶有關係子句的句子的真假值條件。

以（19）來舉例，”teacher who is smart”又可以分為兩部分，一個是“teacher”，一個是“who is smart”，我們已經知道“teacher”的意思是一個類別為<*e,t*>的函數，代表所有老師的集合，那麼“who is smart”是什麼意思呢？其實“who is smart”和“smart”單獨一個字的意思是一樣的，也就是 “teacher who is smart”就等於是“smart teacher”的意思。如果這樣的推論正確的話，關係子句“who is smart”的語意類別應該是<*e,t*>，其指稱意義和“smart”單獨一個字應該是一樣的：

（21）[[who is smart]] = [[smart]] = [λx. x is smart] = {x: x is smart}

也就是，“who is smart”指的是所有聰明個體的集合。

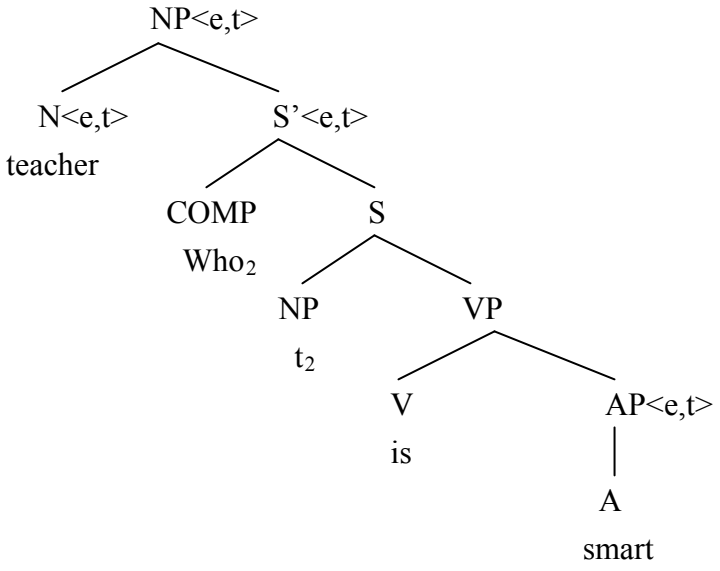
同樣的道理，在“girl who John likes”這個詞組裡，關係子句的意思應該也是代表一個集合，然後和所有女孩所代表的集合做交集，交集的部分就是“girl who John likes”的

外延語意。那麼，“who John likes”代表一個怎樣的集合呢？它代表的是所有約翰所喜歡的對象的集合。

（22）[[who John likes]] = [λx. John likes x] = {x: John likes x}

在上面的假設底下，“teacher who is smart”的結構及語意類別圖應該是（22）。

（22）



剛剛說過，關係子句的語意類別應該和一般形容詞一樣是類別<*e,t*>，如果這是正確的話，接下來的問題是如何得到這個結果。一個可能性是“is”和“who”以及“who”的痕跡都是語意空虛的字，語意類別都是<<*e,t*><*e,t*>>，因此整個關係子句就是類別<*e,t*>。可是這個作法只能解釋像（22）這樣的句子，無法適用於所有類型的關係子句，比方說（18）這個例句就無法適用。

習題 1：請自行思考為何無法適用。

那麼要怎樣來分析關係子句的語意呢？或許我們可以從一個很重要的觀察入手。在句法上，關係子句有兩個重要特點，一個是關係代名詞（或稱為關係運符），另一個是和關係運符具有相同指標的痕跡。在語意上也有兩個重要特點，一個是 lambda 運符，另一個是由 lambda 運符所約束的相同變項，這兩個句法語
意上的相關性可以表示如下：

（23）a. 句法: [**who₂** [**t₂** is smart]]

語意: [**λx**: **x** is smart]

b. 句法: [who$_4$ [John [likes t$_4$]]]

語意: [λx: John likes x]

換句話說，在某種程度上關係運符是被解釋成代表關係子句這個<*e,t*>函數裡的 lambda 運符，而關係子句裡的痕跡則是被解釋成被 lambda 運符所約束的變項。

在語意理論裡，要怎麼樣才能獲得上面這個結果呢？我們需要幾個新的概念。第一，我們需要修改在上一章中所介紹的變項指派。第二，我們需要一條述語抽象規則（The Rule of Predicate Abstraction）。第三，我們需要一條規則來解釋痕跡的語意。下面我們就來介紹這些規則。

首先，我們先來討論修正的變項指派。

（24）修正的變項指派

讓 g 是一個變項指派，n 是個指標，a 是某個個體。g(n/a)代表一個新的變項指派，這個變項指派，除了將指標 n 映射到個體 a 這個部分和原來的變項指派 g 不一樣外，其餘部分完全一樣。

讓我們舉個例來說明。

（25）變項指派 g 的指派如下：{<1, Zhangsan>,<2, Lisi>,<3,Wangwu>}

a. g(1/John) = {<1, John>,<2, Lisi>,<3,Wangwu>}
b. g(2/Zhangsan) = {<1, Zhangsan>,<2, Zhangsan>,<3,Wangwu>}
c. g(5/Mike) = {<1, Zhangsan>,<2, Lisi>,<3,Wangwu>, <5, Mike>}
d. g(1/John)(6/Mary) = {<1, John>,<2, Lisi>,<3,Wangwu>, <6, Mary>}

或是用不同的函數表示法，可以如下呈現：

（26）$g = \begin{pmatrix} 1 & \rightarrow & \text{Zhangsan} \\ 2 & \rightarrow & \text{Lisi} \\ 3 & \rightarrow & \text{Wangwu} \end{pmatrix}$

$g(2/\text{Zhangsan}) = \begin{pmatrix} 1 & \rightarrow & \text{Zhangsan} \\ 2 & \rightarrow & \text{Zhangsan} \\ 3 & \rightarrow & \text{Wangwu} \end{pmatrix}$

$$g(5/\text{Mike}) = \begin{pmatrix} 1 \rightarrow \text{Zhangsan} \\ 2 \rightarrow \text{Lisi} \\ 3 \rightarrow \text{Wangwu} \\ 5 \rightarrow \text{Mike} \end{pmatrix}$$

$$g(1/\text{John})(6/\text{Mary}) = \begin{pmatrix} 1 \rightarrow \text{John} \\ 2 \rightarrow \text{Lisi} \\ 3 \rightarrow \text{Wangwu} \\ 6 \rightarrow \text{Mary} \end{pmatrix}$$

另外一個我們會需要用到的規則是述語抽象規則，這個規則的主要目地是將關係子句的語意變成一個述語，規則如下：

（27）述語抽象規則（Predicate Abstraction, PA）

如果α是一個分叉節點，底下有β和γ兩個女兒節點，而且如果β是一個關係代名詞，其指標為n，那麼對於任一變項指派g，$[[\alpha]]^g = [\lambda x.\ [[\gamma]]^{g(n/x)}]$。

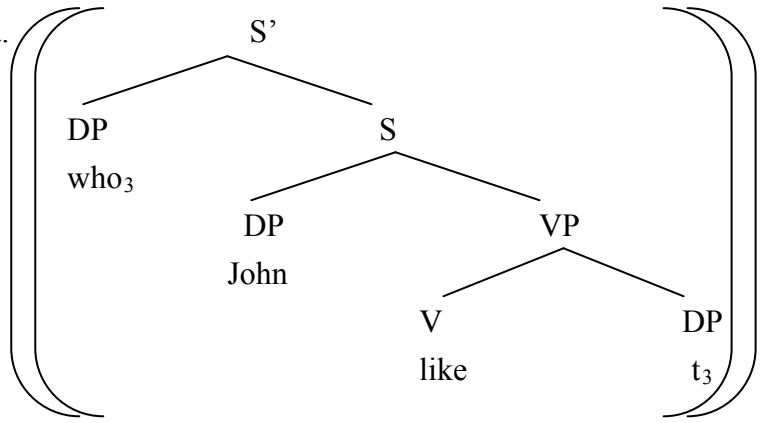
從上面（27）這條規則，我們可以看到關係代名詞被解譯為一個 lambda 運符，關係代名詞的姊妹節點，其語意解釋則是更改為相對應於一個新的變項指派 g(n/x)。這個變項指派和原來的變項指派完全一樣，但是指標 n 必須更改為映射到 x，而這個 x 就是被包含在γ裡的痕跡，變成被 lambda 運符所約束的變項 x。

痕跡的語意解釋規則則是和代名詞的語意解釋方式類似，其定義如下：

（28）代名詞和痕跡規則 (The Rule of Pronouns and Traces, RPT, Heim & Kratzer 1998: 111)

如果X是一個代名詞或是一個痕跡，而g是一個變項指派，n是個在g範域裡的指標，那麼$[[X_n]]^g = g(n)$。

底下的關係代名詞語意運算，就是根據新增的修正變項指派，述語抽象規則及代名詞與痕跡規則所做的運算。

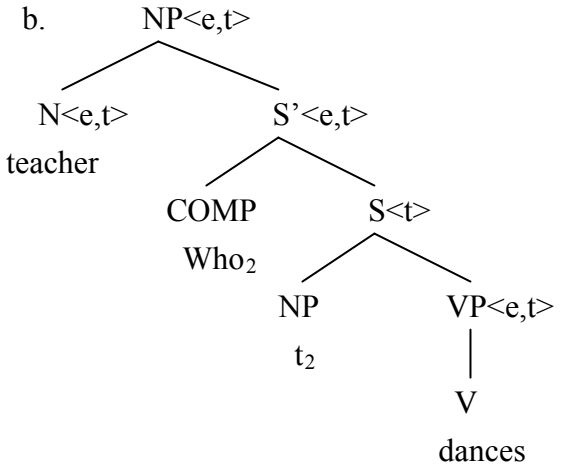
（29）a. 

g = (by PA)

b. $[\lambda x.\ [[S]]^{g(3/x)}\ ]$ = (by FA, NN, TN)
c. $[\lambda x.\ [[VP]]^{g(3/x)}(John)\ ]$ = (by FA, NN)
d. $[\lambda x.\ [[likes]]^{g(3/x)}([[t_3]]^{g(3/x)}(John\ )\ ]$ = (by TN)
e. $[\lambda x.[[\lambda y.\lambda z.\ z\ likes\ y]]([[t_3]]^{g(3/x)})(John))\ ]$ = (by PR)
f. $[\lambda x.[[\lambda y.\lambda z.\ z\ likes\ y]](\mathbf{g(3/x)(3)})(John))\ ]$ = (by notation)
g. $[\lambda x.[[\lambda y.\lambda z.\ z\ likes\ y]](\mathbf{x})(John))\ ]$ =
h. $[\lambda x.[\lambda z.\ z\ likes\ x](John)\ ]$ = (by notation)
i. [λx. John likes x]

接著我們來看關係子句修飾名詞時如何做語意運算。讓我們再來看一次帶有關係子句的樹形圖。

（30） a. a teacher who dances

b. 

關係子句，也就是（30）中的 S'，她的語意運算方式我們已經知道。下一步要做的語意運算是把名詞'teacher'及'who dances'的語意合成起來。名詞"teacher"的語意類別是 <*e,t*>，關係子句"who dances"的語意類別也是<e,t>，因此，不管是前者當函數，或是後

者當函數，函數的運用規則都無法使用，因為他們的姊妹節點都無法充當該函數的論元，產生了類別衝突的情形。按照我們的理論，產生類別衝突時表示該詞組或句子無法獲得語意解釋，但（30）這個結構顯然是有明確語意的。我們在前面第三章裡已經介紹過，Heim & Kratzer (1998) 認為，語意系統裡除了我們之前所熟悉的一些語意解釋規則外，可能還有另外一條規則用來解釋兩個姊妹節點都是<*e,t*>類別的情形，這條規則叫做述語修飾規則，也就是一個述語修飾另一個述語，這條規則的內容，我們再來看一次。

（31）述語修飾規則 (Predicate Modification, PM)
如果α是一個分叉節點，底下有β，γ兩個女兒節點，而且β和γ都是類別<e,t>，那麼對於任一變項指派g，$[[\alpha]]^g = [\lambda x \in D_e . [[\beta]]^g(x)=[[\gamma]]^g(x)=1]$

根據這條規則，α的語意解釋等同於一個<e,t>函數，可以使這個函數為真的個體必須是兩個姊妹節點函數也可為真的個體，所以我們就得到交集的意思。根據（31）這條述語修飾規則，（30）這個結構樹的語意運算如下：

（32）a. $[[\text{teacher who}_2\ t_2\ \text{dances}]]^g$ = (by PM)
b. $[\lambda x. [[\text{teacher}]]^g(x) = T \text{ and } [[\text{who}_2\ t_2\ \text{dances}]]^g(x) =T]$ (by PA)
c. $[\lambda x. [[\text{teacher}]]^g(x) = T \text{ and } [\lambda x. [[t_2\ \text{dances}]]^{g(2/x)}](x)= T]$

(by
d. $[[\text{teacher}]]^g(x) = T$ iff x is a teacher
e. $[\lambda x. [[t_2\ \text{dances}]]^{g(2/x)}](x)= T]$ iff
f. $[\lambda x. [[\text{dances}]]^{g(n/x)}([[t_2]])^{g(2/x)}](x) = T$ iff
g. $[\lambda x. [[\text{dances}]]^{g(n/x)}([[t_2]])^{g(2/x)}](x) = T$ iff
h. $[\lambda x. [[\text{dances}]]^{g(n/x)}(x)](x) = T$ iff
i. $[\lambda x.\ x \text{ dances}](x) = T$ iff
j. x dances
k. $[\lambda x. [[\text{teacher}]]^g(x) = [\lambda x. [[t_2\ \text{dances}]]^{g(2/x)}](x)= T]$ iff
l. λx. x is a teacher and x dances

6.3 中文的關係子句

中文的關係子句和英文有些不同，底下是兩個中文關係子句的例子：

（33）a. [笑的]人
b. [張三喜歡的]人

中文的關係子句和英文一樣會有一個空缺成分，我們先用 e 來表示這個成分，如例句

（34）。

（34）a. [e 笑的]人
　　b. [張三喜歡 e 的]人

但是中文的關係子句似乎沒有和英文相對應的關係代名詞，取而代之的是虛詞『的』的出現。對於這樣一個結構，句法分析上有幾種可能性，一個可能性是中文也有類似於英文的 Wh-關係代名詞，從空缺成分的位置 wh-移位到關係子句的前面，只不過這個關係代名詞在語音上是隱性的，而且和空缺成分具有相同的指標，這樣的典型分析代表為黃正德（1982），如例句（34）。

（34）a. [Wh_1 [e_1 笑的]]人
　　b. [Wh_2 [張三喜歡 e_2 的]]人

在這個分析底下，『的』可以視為和英文"that"相對應的子句補語連詞，而且沒有任何的語意，它的存在只是為了在語法上標示修飾關係。

另一個分析方式則是直接將『的』分析成約束空缺成分的運符，因此，在語意上，『的』就直接對應於一個 lambda 運符。

如果我們採用第一種方式，其語意解釋規則和運算將類似於英文的情形，所以我們不重複討論。如果是第二種方式，中文可能就需要修改述語抽象規則如下。

（35）述語抽象規則（Predicate Abstraction, PA）
　　如果α是一個分叉節點，底下有β和γ兩個女兒節點，而且如果β是『的』，其指標為n，那麼對於任一變項指派g， $[[\alpha]]^g = [\lambda x. [[\gamma]]^{g(n/x)}]$。

不管是採用第一種還是第二種方式，其實都有其共同缺點，也就是『的』的分析方式似乎不夠全面。

習題 2：請利用上面第一或第二種中文關係子句的分析方式來運算下面例子的真假值條件。

（i）張三喜歡那一位教數學的老師。

6.4 『的』的語意

如果我們仔細觀察中文『的』所出現的語境，其實『的』不僅出現於有空缺成分的關係子句，而是幾乎所有修飾名詞的修飾語，都可以用『的』做中介成分，如下列例句：

（36）a. 張三的書　　NP+N
b. 昨天的會議　　NP+N
c. 樹上的蛇　　NP+N
d. 自私的人　　AP+N
e. 偷錢的小偷　　VP+N
f. 他教過的學生　　S+N
g. 他彈鋼琴的聲音　　S+N
h. 李四破產的消息　　S+N

上面（36d）到（36f）的例子，名前修飾語，不管是 AP, VP 或是 S 都可以分析成少了一個空缺主語或是空缺賓語的關係子句，所以這幾個例句中的『的』在分析上應該不會很困難。但是在（36a）到（36c）的例句裡，修飾語都不是完整的句子，而僅是用一個名詞組來修飾另一個名詞，這個名詞組修飾語可以是一個個體、時間、處所、學科等，但是很難說他們有缺少了什麼樣的空缺成分。同樣地，在（36g）和（36h）這兩個句子裡，修飾語雖然是一個完整的句子，但是卻找不到空缺成分，因此也很難說這些例句牽涉了 Wh-移位。

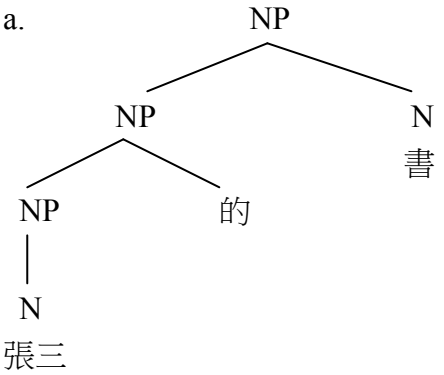
這些沒有空缺成分的修飾語，很難把中介虛詞『的』分析成一個lambda運符，但是要分析成不具任何語意成分的詞彙似乎也有困難。比方說，在例句（36a），普通名詞『書』的語意類別是<*e,t*>，專有名詞『張三』的語意類別是類別*e*，現在如果把『的』分析成沒有任何語意的虛詞，那麼，『張三』和『張三的』的意思應該會一模一樣，也就是『的』必須分析成類別為<*e,e*>的函數$\lambda x: x \in D_e. x$，可是如此一來，當類別為*e*的『張三的』和類別為<*e,t*>的『書』組合時，我們會得到一個語意上相當於張三是書這樣一個類別為*t*的語意，這個結果顯然是錯的，因為名詞組『張三的書』其語意解釋不可能是一個真假值。其它像（36b）-（36c），或是（36g）-（36h）的例句也會有相同的問題。

上面的討論告訴了我們一個結論：如果關係子句修飾語的『的』要分析成一個 lambda 運符或是不具語意的連接語，那麼我們就無法統一地處理“XP 的+N”中『的』的語意，可是在所有的例句裡，『的』的功能似乎都在引借出修飾語，將修飾語的語意與其後被修飾語名詞的語意連結起來，所以真正的問題是要如何把不同語境中的『的』統一起來並賦予它一個單一的連結語意。以下，我們就要來做這樣一個嘗試。

首先我們再來討論一下『張三的書』這個例子。這個名詞組的語意除了在外延上指稱書這樣的個體外，也表達了一些沒有明確說出來的意思，也就是，張三和書之間的關係。當一個說話者說出『張三的書』這樣一個名詞組時，他可能是要表達張三所擁有的書，或是張三所寫的書，或是張三買的書等，究竟是表達哪一種關係必須透過實際的談話語境才能知道。比方說，如果談話雙方都知道張三在寫書，那麼『張三的書』表達的就是『張三正在寫的書』，如果談話雙方知道張三下午逛書店時買了一本書，那麼『張

三的書』指的就是張三下午逛書店時買的那本書，我們認為『的』的語意內涵除了在句法上連結修飾語與被修飾語外，更重要的是在語意上它表達了一個修飾語與被修飾語的開放關係，這個開放關係是靠語境來確立的，根據這樣的想法，『張三的書』中的『的』是先帶上一個類別為 *e* 的個體後，再帶上另一個類別為<e,t>的普通名詞來形成另一個類別為<e,t>的名詞性述語，這個名詞性述語可以再帶上指示數量詞，如『那一本張三的書』形成完全名詞組。

（37）a.



b. [[的]] = $\lambda x_e.\lambda P_{<e,t>}.\lambda y.[R(y)(x) \& P(y)]$

c. [[張三的] = $\lambda P_{<e,t>}.\lambda y.[R(y)(Zhangsan) \& P(y)]$

d. [[張三的書]] = $\lambda y.[R(y)(Zhangsan) \& books'(y)]$

在（37）的最後一行（37d），以集合的角度來說明，它的意思是：這是一個由 y 所構成的集合而且 *y* 是書，並且張三和 *y* 具有 *R* 這樣的一種關係。R 本身是一個自由變項，因此它的語意值是透過變項指派來決定，但是怎樣的關係可以是 R 的值呢？其情形就如同代名詞的指稱到底要指誰是一樣的，完全要靠語境才能確定。語境中，如果我們知道張三買了書，那麼 R 就代表『買』這樣的關係，如（38）。

（38） $\lambda y.[bought(y)(Zhangsan') \& books'(y)]$

雖然 R 的值是由語境，也就是變項指派決定，但也由其他因素制約，特別是中心語名詞的語意，比方說『書』這個名詞，世界百科知識告訴我們，書是寫出來的，書是可以買賣的，書是可被擁有的，這些百科知識限制了 R 的可能值，很有可能說話者或是聽話者就是從這些可能值裡去選取語境中最凸顯的那個值來確定 R 究竟代表哪一種關係。

類似的處理方式可以運用到（36）中其它的例句上。如（36b）的語意運算結果最終應該是（39）。

（39） $\lambda y.[R(y)(yesterday) \& conference(y)]$

（39）代表的是會議的集合，而且在這個集合裡的會議都和昨天的時間具備某種關係

R。根據我們上面的分析，這個關係 R 和我們對於會議的世界百科知識有關。我們知道會議是在一定的時間、一定的場合裡舉行的，因此時間關係很容易被激活出來當作（39）中 R 的值，也就是 R 的值可以視為等同於 'is the time of'的關係。換句話說，(39)中的兩個條件所表示的意義如下 : Yesterday is the time of y and y is a conference。

（36c）的情形也是類似。當說話者談到蛇與代表處所的『樹上』時，方位處所關係很容易被激活，所以（36c）可以輕易地理解為蛇在樹上，此時的 R 就表示個體所在地的關係，也就是 : The tree is the location of y and y is a snake。

上面討論的是幾個修飾語為名詞組的情形。接下來我們來討論（36g）和（36h）。這兩個例句都是以子句來修飾名詞，其結構有點類似於關係子句，但是子句裡面並沒有任何空缺成分。在我們所熟知的文獻裡，似乎還沒有人詳細地提出這類型的結構要如何進行語意運算，特別是子句修飾語與中心語名詞之間的語意連結要如何處理，文獻上並無任何具體的分析。在這裡，我們主張這類型結構的語意連結是透過虛詞『的』來完成，而且這裡的『的』的語意解釋和之前所討論的『的』是同一個『的』。

首先我們必須做一個小小的改變。之前在（37）中討論『的』時，『的』所帶上的第一個論元是類別 *e* 的個體，如例句（36a），之後我們也討論了表時間或是處所的論元，這些論元，其語意類別可能也不是類別 *e*，（36g）和（36h）子句修飾語的語意類別更不可能是類別 *e*，由此我們可以推斷，『的』的第一個論元，也就是修飾語，其語意類別並無特殊限制，似乎各種語意類別都可以，因此我們提議，『的』的第一個論元無須作類別上的限制，除此之外，『的』的語意不需要做太多變更。

（40）[[的]] = $\lambda\alpha.\lambda P_{<e,t>}.\lambda y.[R(y)(\alpha) \& P(y)]$, where the type of α is free.

以（36g）『他彈鋼琴的聲音』為例，（39）中的α代表的就是『他彈鋼琴』，*y* 代表的則是『聲音』，（39）的語意要求『他彈鋼琴』和『聲音』必須具有一關係 R，我們的世界百科知識告訴我們聲音的產生是有來源的，我們也知道彈鋼琴的時候會發出或製造出聲響，所以語用上，在（36g）中的『他彈鋼琴』，很自然的被解釋成『聲音』的產生來源(source)或原因(cause)，換句話說，『他彈鋼琴的聲音』的邏輯解釋大概是（41），這個邏輯式子表示聲音的集合，但不是任何的聲音都可以在這個集合裡，必須是由彈鋼琴所製造出來的聲音才行，在這個例子中，R 所代表的關係是一種來源或原因關係。

（41） a. $\lambda y.$[is-the-source-of(y)(he-play-the-piano) & sound(y)]
interpretation: his playing the piano is the source of the sound
b. $\lambda y.$[cause(y)(he-play-the-piano) & sound(y)]
interpretation: his playing the piano causes the sound

接著我們來看（36h）的情形。在這個例子裡，子句『張三破產』通常被視為中心語名詞『消息』的同位子句，也就是說，消息的內容就是同位子句所表達的命題。這種同位子句修飾名詞的『的』是否依舊可以沿用我們上面的分析呢？根據我們的分析，

（36h）的邏輯式子如下：

（42） λy.[R(y)(Zhangsan-is-bankrupt) & news(y)]
interpretation: That Zhangsan is bankrupt has a relation R to y, which is a piece of news.

（42）的意思是說，那是一個由 y 所構成的集合，而且張三破產這個事件和 y 具有關係 R 且 y 是消息。所以現在重點是 R 到底是什麼? 如果前面所說，消息的內容就是同位子句所表達的命題，這樣的看法正確的話，那麼 R 或許可視為同一關係 (Identity Relation)，也就是張三破產這個事件本身就是消息內容。

最後剩（36d）-（36f），這三個例子應該可以做同樣的分析。首先看（36d），這是個形容詞帶『的』來修飾名詞的情形。假設我們上面對"的"的分析不變，那麼（36d）的語意解釋應該是（43）。

（43）λy.[R(y)(λz. z is selfish) & person(y)]

從集合的角度來說，（43）所表示的語意是一個集合，這個集合由所有的y構成，y是表人的個體而且自私這樣的特質和y具有R的關係。個體和特質間很容易建立的一個關係就是個體具有那個特質，或是反個方向來說，我們也可以說特質說明陳述了個體。[19]基於這樣的認知，我們認為（43）中的R可以視為陳述關係（the relation of 'is predicated of'），也就是（43）的解釋等同於下面這個集合：

（44）{y : y is a person and the property of being selfish is predicated of/is true of y}

同樣的分析可以運用到（36e）和（36f）。假設我們採用黃正德（1982）的分析，把關係子句視為隱性Wh-移位，那麼移位後的關係子句，語意上就可解釋為特質，所以（36e）和（36f）的分析可以完全等同於（36e）。[20] 如果我們上面的討論正確的話，那麼虛詞"的"就不是一個lambda運符，也不是一個語意虛空的聯繫詞而已，而是一個概化的隱性關係表達詞。

參考文獻

Zhang, Niina (2008) "Gapless Relative Clauses as Clausal Licensors of Relational Nouns", Language and Linguistics 9(4): 1003-1026.

[19] 用英文來說，就是" A property is predicated of an individual"。
[20] 在這樣的分析下，關係子句在語意上是主語，被修飾的名詞則是述語。請比較Zhang (2008)的看法。

Tenselessness

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1. Introduction

In discussing the grammatical tense system in English, Jespersen (1933, p. 230) begins with the following quote:

> "It is important to keep the two concepts *time* and *tense* strictly apart. The former is common to all mankind and is independent of language; the latter varies from language to language and is the linguistic expression of time-relations, so far as these are indicated in verb forms."

The above statement clearly points out flexibility in the way in which a language might express time-relations–i.e., grammatical tense markings. Indeed, it has since been shown that language can employ a variety of tense markings to locate situations in time. In some languages, these markings express a past vs. non-past distinction and in some others a future vs. non-future distinction. However, not all natural languages employ "verb forms" or tense markings to locate situations in time. It has been reported that some languages have no grammaticalized tense markings at all but nevertheless express time as precisely as those that do (See esp. Bohnemeyer 2002, 2009 on Yukatek Maya; Shaer 2003, Bittner 2005, 2008 on Kalaallisut; Lin 2003a, 2006; Smith and Erbaugh 2005 on Chinese and Tonhauser 2006 on Guaraní.) Tenseless languages, however, have received much less attention than tensed languages, even though "grammatically tenseless" systems seem to make up at least half of the world's tense-aspect systems according to DeCaen's (1995) work. The goal of this chapter is to explore (i) the ways in which tenselessness is identified, (ii) syntactic properties associated with tenseless languages (iii) possible mechanisms and variations in which temporal location is expressed in tenseless languages, and (iv) possible challenges in establishing a tenseless language, with a special focus on Mandarin Chinese, Kalaallisut and St'át'imcets.

2. Criteria for Tenselessness

It isn't possible to discuss tenselessness if one doesn't know what tenses are. However, defining what tenses are is actually a notoriously difficult task, given that the border between tenses and other temporal expressions is sometimes hard to draw and the distinctions between tense, aspect, mood and modality make the task even more thorny. Despite such complexity

and lack of a general consensus, the literature has suggested some criteria which might help identify a linguistic expression as a tense. Comrie′s (1985) distinction between tense and aspect is a very good starting point. He has characterized tense as the 'grammaticalized expression of location in time', distinguishing it from aspect, which is about the 'internal temporal constituency' of a situation (Comrie 1985, pp. 9-10). This distinction between tense and aspect is later expressed by Klein (1994) in terms of Reichenbach′s (1947) famous distinctions among speech time (ST), topic time (TT) and event time (ET).[i] According to Klein (1994), tense is a relation between two times, specifying the temporal precedence relation between TT and ST, whereas aspect specifies an inclusion relation between TT and ET. The precedence relation between TT and ST determines three tenses—past, present and future.[ii] A tense is past if TT precedes ST, is present if TT and ST are cotemporary and is future if TT follows ST.[iii] In contrast, aspect is an inclusion relation between ET and TT. An aspect is perfective when ET is included within TT, and is imperfective when the inclusion relation between ET and TT is reversed.[iv]

Klein′s characterization of tenses would be of limited use if not accompanied by other criteria. For instance, just like past tense markers, a past-denoting temporal adverbial such as *yesterday* denotes a reference time before the speech time but one wouldn't call it a tense. A helpful criterion, as indicated by Comrie′s characterization of tense, is that tense morphemes are integrated into the grammar of the language, typically morphologically bound, and are obligatory, even though they are not necessary for interpretation. Therefore, temporal adverbials are not tense morphemes, because they are not grammaticalized expressions that appear in every (matrix) sentence, whereas the morpheme *–ed* in English is a tense morpheme, because it expresses the precedence relation between the reference time and the speech time and is always present even if something else has provided a similar temporal relation as the temporal adverbial *yesterday* in (1) does.

(1) John cried yesterday.

In other words, a tensed language requires the presence of a morpheme which locates a situation in time whether or not similar temporal information is conveyed by other temporal expressions. In modern syntactic theories, such tense morphemes are often assumed to occupy a syntactic functional node Tense (T), projecting its own maximal projection TP. Given this, in what follows, tense will be taken to be an obligatory morpheme under the T node whose semantic function is to constrain the topic times of utterances with respect to a reference point. When the reference point is the speech time, the tense is a deictic tense; otherwise a relative tense.

In addition to the above characterizations of tense and aspect, there are other criteria which distinguish the two concepts, as discussed by Tonhauser (2006, section 2.2, chapter 2):

(2) A. Grammatical aspect markers, but not tenses, may show restrictions with members of particular semantic class (aspectual classes or aktionsart).
B. Grammatical aspect markers, but not tenses, may co-occur.
C. Grammatical aspect markers, but not tenses, may encode a state change.
D. Tenses, but not grammatical aspect markers, restrict the time of evaluation.
E. Tenses, but not grammatical aspect markers, are anaphoric.

The above criteria for distinguishing tense and aspect are by no means perfect, but they suffice for the purpose of the discussion of tenselessness in this chapter.

Apart from grammatical inflections, tenselessness of a language can also be supported by syntactic evidence such as the lack of some syntactic property typically associated with tense or the possibility or impossibility of a certain construction. In this chapter, such evidence, in particular evidence from Chinese, will be adduced in support of lack of tense in this language.

3. Chinese as a Tenseless Language

When it comes to tenseless languages, one candidate that often comes to mind is Chinese. For example, in Binnick's (1991) monumental work *Time and the Verb: A Guide to Tense and Aspect*, Chinese dialects are cited as tenseless languages, in addition to Biblical Hebrew and Quranic Arabic. However, detailed arguments for Chinese as a tenseless language were not brought to the fore until recently by Lin's (2003a, 2006, 2010) works. Although there is still a debate concerning whether Chinese should be analyzed as a tenseless language as in Lin (2006, 2010) or a null tensed language as in Sybesma (2007), it is one of the few tenseless languages in the world that have received a detailed tenseless analysis in the literature. Therefore, in this chapter, Chinese will be used to illustrate tenselessness.

3.1 Present time reference

Verbal stems in Chinese are not obligatorily inflected for person, number, gender, tense or aspect and need not co-occur with a temporal, aspectual or modal marker, but they express temporal locations as precisely as tensed verbs in English do. In this section, present time reference will be discussed first.

For stative sentences, present time reference is expressed by an unmarked verb, adjective or nominal with or without an accompanying temporal adverbial denoting the present time as illustrated by (3).

(3) a. Wǒ （xiànzài） bú xìn shén
I now not believe god

'Now I don't believe in god.'

b. Zhāngsān (jīntiān) hěn máng
Zhangsan today very busy
'Zhangsan is busy (today).'

c. Tā nánbù rén
he southern-part person
'He is from the south.'

Similarly, dynamic verbs are not marked in present time contexts and can be further divided into two classes. When a dynamic activity verb stands unmarked by itself, it receives a generic or habitual interpretation as illustrated in (4). Such generic sentences can be understood as a kind of state (Michaelis 2006).

(4) Wǒ （měi tiān/chángcháng）mànpǎo
I every day/often jog
'I jog (every day/often).'

To obtain a present episodic process reading, the present progressive marker *zài* must be used as in (5).

(5) Wǒ zài mànpǎo[v]
I PROG jog
'I am jogging.'

Note that *zài* cannot be analyzed as a present tense marker, because it is compatible with a time adverbial denoting a past or future interval, as witnessed by (6)

(6) Wǒ zuótiān zhèi-ge shíhòu zài mànpǎo
I yesterday this-Cl time PROG jog
'I was jogging at this time yesterday.'

Therefore, if Chinese has a present tense marker, it must take a null form. The null tense hypothesis, however, runs into difficulties, because not every unmarked dynamic verb gives rise to a present interpretation. For example, (7) is an accomplishment sentence but it only has a past interpretation.

(7) Zhāngsān bǎ wǒ bǎng zài yǐzi shàng
Zhangsan BA me tie in chair on
'Zhangsan tied me in a chair.'

Similarly, a dynamic achievement gives rise to a past interpretation as shown by (8).

(8) Zhāngsān dǎpò yí shàn chuānghù
Zhangsan break one CL window
'Zhangsan broke a window.'

In fact, unmarked verb forms also appear in future contexts, as illustrated by (9), where the sentence contains a future time adverbial.

(9) Wǒ míngtiān xiě xìn gěi nǐ
I tomorrow write letter to you
'I will write a letter to you tomorrow.'

Examples such as (7) through (9) indicate that it is problematic to assume that the present tense in Chinese is a null form. In particular, the contrast between (3)-(5) and (7)-(9) proves that Chinese has no grammaticalized morpheme whatsoever, not even a null one, which grammatically demarcates the present from the non-present contexts. Instead, the data indicates that the temporal interpretation of a Chinese sentence seems to be sensitive to the situation type of the sentence.

3.2. Past time reference

Given below are some examples that describe past events.

(10) Lǐsì dǎpò huāpíng
Lisi break vase
'Lisi broke a vase.'
(11) Lǐsì zuótiān dǎpò huāpíng
Lisi yesterday break vase
'Lisi broke a vase yesterday.'
(12) Lǐsì dǎpò-le huāpíng
Lisi break-ASP vase
'Lisi broke a vase.'
(13) Lǐsì dǎpò-guo huāpíng
Lisi break-ASP vase
'Lisi broke a vase before.'

The above examples show that past time reference in Chinese can be achieved by means of a

zero form as in (10), a temporal adverbial as in (11), a perfective aspectual marker as in (12) or an experiential marker as in (13). In all of the examples, no single morpho-syntactic morpheme obligatorily occurs with them, indicating that there is no specific morpheme in Chinese that is used exclusively for past time reference. Like present time reference, postulating a null past tense for Chinese is not an ideal way to account for the past interpretation, because a zero form appears not only in past contexts but also in present and future contexts as discussed earlier. It is quite unlikely that the same null-form can function simultaneously as a past tense, present tense or future tense in a given language, not only because this does not conform to a grammatical paradigm, but also because it gives rise to an impassable problem for language acquisition. If a zero form can be a past tense, a present tense or a future tense, how can a child know that the following sentence cannot be interpreted in the past or in the future?

(14) Xiǎomíng hěn cōngmíng
Xiaoming very smart
a. 'Xiaoming is smart.'
b. *'Xiaoming was smart.'
c. *'Xiaoming will be smart.'

Or alternatively, how can a child know that a past sentence cannot be interpreted in the present or the future?

As for the aspectual markers *le* and *guò*, they are not pure tense markers because on the one hand they are not required in every sentence with a past interpretation, and on the other hand they encode a state change, which tense markers don't. Consider the contrast between (15) and (16) below.

(15) Zhāngsān diéduàn-le zuǒ tuǐ
Zhangsan break-Asp left leg
'Zhangsan broke his left leg, (and it is still broken).'
(16) Zhāngsān diéduàn-guò zuǒ tuǐ
Zhangsan break-Asp left leg
'Zhangsan broke his leg before, (but it is now cured).'

Both (15) and (16) assert that an event of leg-breaking occurred before the speech time. However, apart from this assertion, (15) implies that the state of Zhangsan's leg being broken still holds at the speech time, whereas (16) implies that Zhangsan's broken leg has been cured. Clearly, both *le* and *guò* say something about the result state of an event and therefore they cannot be pure tense markers. From the above discussion, it can be concluded that Chinese has no obligatory morpheme that grammatically demarcates the past contexts from the

non-past contexts.

3.3 Future time reference

To establish a future tense in a language has been notoriously difficult because future time reference often involves modality or mood. Chinese is no exception in this regard. The future marker that has been discussed most often in the literature is the modal auxiliary *huì* 'will'. To illustrate, consider (17), which is a statement about a state of affairs that will hold at a time subsequent to the present moment. In this example, the morpheme *huì* is obligatory.

(17) Míngtiān *(huì) xiàyǔ
Tomorrow will rain
'It will rain tomorrow.'

However, not every sentence with a future time reference contains the morpheme *huì*. Compare (18) with (17). Unlike (17), *huì* 'will' in (18) is not allowed even if the time of the train's leaving is subsequent to the speech moment.

(18) Huǒchē sān diǎn (*huì) kāi
train three o'clock will leave
'The train leaves at three o'clock.'

The difference between (17) and (18) is that the latter is a scheduled or planned event with a low possibility of change if everything proceeds normally, whereas (17) is a non-controllable prediction based on current information about the weather. When the weather changes, the chance of rain could change at any time. So the use of *huì* seems to add more uncertainty toward the proposition expressed than a version without it. The difference between (17) and (18) is quite similar to the English *will*-future and futurate future as the translations in (17) and (18) indicate.

There are also cases where *huì* is optional as in (19).

(19) Wǒ xiàwǔ bú (huì) zài bàngōngshì
I afternoon not will in office
'I will not be in my office this afternoon.'

It might be subtle to tell what the meaning difference is between the version with *huì* and the one without it, but it sounds like the former version has a planned event reading, whereas the latter is a prediction about a future eventuality.

Another property of the future reference in Chinese is that *huì* 'will' can sometimes be

replaced by another future-denoting expression *jiāng* 'will' without changing the future meaning, as (20a) indicates. In fact, both may appear even at the same time, again without changing the meaning. This is illustrated by (20b).

(20) a. Míngtiān de huìyì *jiāng*/huì yóu Zhāngsān zhǔchí
tomorrow DE meeting will/will by Zhangsan chair
'Tomorrow's meeting will be chaired by Zhangsan.'
b. Míngtiān de huìyì *jiāng* huì yóu Zhāngsān zhǔchí
tomorrow DE meeting will will by Zhangsan chair
'Tomorrow's meeting will be chaired by Zhangsan.'

Still another future marker is *yào* 'want', which often has a volitional reading but has a future meaning when the subject is inanimate or when the subject is not the agent of the event as in (21).

(21) Tīngshuō Zhāngsān yào bèi diàozhí ， shì zhēn de mā ？
hear Zhangsan will PASS transfer.post be real DE PAR
'I heard that Zhangsan will be transferred to another post. Is it true?'

The examples discussed above indicate that there is no fixed future marker in Chinese. In particular, *huì* is not a grammaticalized future tense marker. Indeed, *huì* also appears in many non-future-exclusive contexts as Liu (1997), Chang (2000), Ren (2008) have discussed. Below some such contexts will be discussed.

The first non-future context in which *huì* appears is a generic one expressing a regularity of the situation in the summer.

(22) Zhèlǐ xiàtiān cháng (huì) xiàyǔ
Here summer often will rain
'It often rains here in summer.'

The statement in (22) is made on the basis of past circumstantial evidence and is not falsified even if it does not rain in a particular future summer. Nor is it falsified or infelicitous if uttered when it is raining at the speech time in the summer.

Next consider (23).

(23) Tā zuótiān jìngrán (huì) shīcháng ，shízài rang rén
he yesterday unexpectedly will abnormal really let people
wǎnxí
regretted

'How come (it was possible that) he performed abnormally yesterday? To this, I feel very regretful.'

This sentence conveys the speaker's surprise at the realization of an abnormal performance of the subject NP. In this sentence, the word *jìngrán* 'to one's surprise' is obligatory, presupposing that the speaker's expectation worlds were such that the subject NP would not perform abnormally. *Huì*, on the other hand, seems to be a past possibility operator. So the meaning of this example can be translated with a possibility predicate as given in (23). This use of *huì* does not have a future time reference and hence is not a future tense marker.

Finally, *huì* may co-occur with the present time adverb *xiànzài* 'now' when the predicate is about a state rather than an event as in (24). What is interesting about this use of *huì* is that it must appear in a question as in (24a) or a negation as in (24c). In either case, what is questioned or negated is a current state rather than a future state. But a positive statement such as (24b) is infelicitous. The contrast between (24a), (24c) and (24b) indicates that it is the uncertainty of a proposition that licenses the present interpretation of *huì* in (24a) and (24c). Since uncertainty necessarily involves alternative worlds, *huì* in (24a) and (24c) must be a modal expression rather than a future tense marker.

(24) a. Tā xiànzài hái (huì) hěn bàdào mā
he now still will very domineering Q
'Would he still be very domineering now?'
b. * Tā xiànzài huì hěn bàdào
he now will very domineering
'He is very domineering now.'
c. Tā xiànzài bù huì hěn bàdào
he now not will very domineering
'He is not domineering now.'

The temporal orientation of *huì* 'will' is actually in line with other epistemic modals in Chinese. According to Ren (2008), epistemic modals in Chinese may receive a future and/or a present interpretation, depending on the situation type expressed by their complement. When the complement is an event, a future interpretation is obtained; when the complement is a state, either a present or a future interpretation is possible, depending upon whether there is a future-denoting adverbial, as illustrated by the examples in (25) and (26).

(25) Tā kěnéng/yīnggāi lái (Event: future)
He may/should come
'He may/should come.'

(26) Tā （míngtiān）kěnéng/yīnggāi zài jiā (State: present or future)
he tomorrow may/should at home
'He may/should be at home (now/tomorrow)

Huì 'will' is completely like *kěnéng* 'may' and *yīnggāi* 'should' in this respect. The parallelism between *huì* and other epistemic modals strongly support the position that *huì* is not a future tense marker in Chinese. In fact, it has been analyzed as an irrealis marker by Liu (1997) and Wang (2007).

It can be concluded now that Chinese does not have any expression that is grammaticalized in every sentence with a future time reference but does not appear in other non-future contexts. The most likely candidate for a future tense marker, i.e., *huì*, is not restricted to future contexts. Its distribution indicates that it involves a modality component as part of its inherent lexical meaning though it is beyond the scope of this chapter to pin down exactly what it means. In view of the above remarks, it can be safely concluded that Chinese is not a tensed language with a two-way split with an opposition between future and non-future.

4. Syntactic Properties Associated with Lack of Tense

In the last section, it was shown that Chinese has no grammaticalized morpheme for tense, be it a present, past or future tense. Nor is there any evidence for a two-way split with an opposition between present and non-present, between past and non-past or between future and non-future. If the above discussion is correct, Chinese is not a tensed language. As discussed by Lin (2010), this claim can be further backed up by some syntactic properties which can be attributed to the lack of tense. In this section, four such syntactic properties will be discussed to further support the tenseless analysis of Chinese sentences.

4.1 Existence of bare nominal predicates

A property of Chinese syntax is the fact that nominal and adjectival predicates alone can serve as the main predicate of the sentence without a copula, as illustrated by the examples in (27).

(27) a. Zhāngsān hěn cōngmíng
Zhangsan very smart
'Zhangsan is very smart.'
b. Jīntiān xīngqítiān
Today Sunday
'Today is Sunday.'
c. Tā dà bízi

he big nose
'He has a big nose.'

d. Yuànzi lǐ yí piàn qīhēi
yard in one-CL darkness
'There is all darkness in the yard.'

This contrasts with English data, which always require the copula verb *be* when the main predicate is an adjectival or nominal one.

A possible account for the obligatory presence of the copular verb *be* in English, as pointed out by Tang (2001), is that English is a tensed language and the tense morphology (feature) needs to be checked by a verb, hence the presence of the semantically vacuous copular verb *be*. In contrast, Chinese does not have a syntactic tense and hence there is no T feature to be checked to begin with. Therefore, a nominal or adjectival predicate may constitute the main predicate of a sentence without the company of any verb.

4.2 Lack of expletive subjects

Another property that can be used to support the lack of the syntactic T in Chinese is the lack of the subject requirement. In English the subject requirement explains the presence of the expletive *there* in existential constructions such as (28) and the presence of the extraposition *it* in (29) and the weather *it* in (30) (Chomsky 1981).

(28) There is a fly in your soup.
(29) It is impossible that John has left.
(30) It is raining.

In contrast with the above English examples, the Chinese counterparts do not require an expletive in subject position, as illustrated by (31) and (32).

(31) Yǒu yì-zhī cāngyíng zài nǐ de tāng lǐ
have one-CL fly in you Poss soup inside
'There is a fly in your soup.'

(32) Xià yǔ le
Fall rain Par
'It is raining now.'

(33) Bù kěnéng Zhāngsān yǐjīng zǒu le
not possible Zhangsan already leave ASP
'It's impossible that Zhangsan has left.'

It has been argued that the subject requirement is related to tense. For instance, Roberts & Roussou (2002) have proposed a principle such as (34) to derive the subject requirement.[vi]

(34) The head containing T must have a filled specifier.

According to Roberts and Roussou, tense in English is spelled out in T, so SpecTP must be filled, hence the subject requirement. If their analysis is correct, then the absence of the subject requirement in Chinese can be attributed to the lack of tense; namely, Chinese has no T node, so there is no subject requirement.[vii]

4.3. Lack of finite vs. nonfinite distinction

If Chinese does not have tense, another interesting prediction is that it might lack the finite vs. non-finite distinction, as finiteness is often defined to be connected with tense. Indeed, in Chinese the same verbal form is used in all syntactic contexts and subordination is indicated by position alone. For example, the subordinate verb *líkāi* 'leave' in (36) has the same form as the main verb in (35).

(35) Tā líkāi xuéxiào sān tiān le
He leave school three day PAR
'It has been three days since he left school.'
(36) Tā shèfǎ líkāi xuéxiào
He try leave school
'He tried to leave school.'

Despite this, some linguists (Huang 1998 [1982]; Li 1985; Tang 1990; Tang 2000) have tried to identify the finite vs. non-finite distinction in Chinese, using tests such as the possibility of a future modal, the distribution of overt NPs and empty categories and A-not-A questions, etc. However, these tests have been shown to be not reliable by Hu, Pan and Xu (2001), Xu (2003) and Lin (2010). If these authors' arguments are correct, then it is not clear that Chinese has a finite vs. non-finite distinction. The lack of such a distinction can be attributed to the lack of a syntactic T node.

4.4 Lack of case-motivated movement

Pesetsky and Torrego (2001) have argued that case might be a direct consequence of the functional category T. Thus, if Chinese has no tense, we expect it not to have case-motivated movement. There seems to be evidence for this, because the most recent analysis of Chinese passives as given by Huang, Li & Li (2009) has shown that Chinese passive constructions

such as (37) display properties of A'-movement rather than A-movement.[viii]

(37) Zhāngsān bèi Lǐsì dǎ-le
Zhangsan PASS Lisi hit-Asp
'Zhangsan was hit by Lisi.'

According to them, the above kind of passive constructions allows long distance movement and resumptive pronouns, and displays island sensitivity.

Raising constructions are another type of constructions which are claimed to involve case-motivated A-movement in the literature. However, Lin (2010) has pointed out that subject movement in raising-like constructions such as (38) is optional.

(38) a. Kěnéng Zhāngsān bú qù le
likely Zhangsan not go PAR
'It is likely that Zhangsan will not go.'
b. Zhāngsān kěnéng bú qù le
Zhangsan likely not go PAR
'Zhangsan is likely not to go.'

Since case-motivated movement is obligatory, the optional subject movement in (38) might be another type of movement such as focus or topic movement.

4.5 Cross-linguistic similarity in tenseless syntax

In the last section we saw that the absence of certain constructions in Chinese might be tied to the absence of the functional head T in Chinese. Significantly, such correlates are not unique to Chinese but can be found in other tenseless languages. For example, according to Ritter and Wiltschko (to appear), Blackfoot, another tenseless language, lacks the effects of structural case and this is a direct consequence of the lack of T. Similarly, Ritter and Rosen (2005) have argued that all Algonquian languages lack A-syntax phenomena related to SpecTP, including Case, Case-motivated A-movement, and A-binding and this is because they lack TP altogether, or T is not specified for Case. According to them, these languages do not move for Case reason, but only for discourse purposes such as topic or focus, or for *wh*-questions, which are all A'-movement. The above cross-linguistic similarities between Chinese, Blackfoot and the Algonquian languages indicate that tenseless languages tend to share some syntactic properties in common which are not observed in tensed languages.

5. An Aspect-based Approach to Temporal Interpretations in Chinese

In last section, it was shown that there is no clear evidence in favor of the existence of T in Chinese. To the contrary, there is strong evidence that T does not exist. If this conclusion is correct, an important question to ask is how this language expresses temporal locations, given that there is no syntactic tense to constrain topic time vis-à-vis utterance time. In Lin (2003a, 2006, 2010), it has been argued that Chinese essentially uses aspectual information, temporal adverbials, discourse anaphora, individual lexical items and pragmatic reasoning to determine the temporal interpretation of a sentence. In particular, the functional head ASP in a tenseless language seems to play the role that T does in a tensed language. In this section, some of these strategies will be reviewed.

As mentioned in section 3, when a Chinese sentence does not contain a temporal adverbial or aspectual marker, its temporal interpretation is sensitive to the situation type. States and dynamic activities give rise to the present interpretation, whereas achievements and accomplishments are interpreted in the past. Here are some more examples to illustrate this:

(39) Xiǎomíng hěn guāi
Xiaoming very well-behaved
'Xiaoming is well-behaved.'
(40) Xiǎomíng zài shuìjiào
Xiaoming PROG sleep
'Xiaoming is sleeping.'
(41) Xiǎomíng dǎpò yí-ge huāping
Xiaoming break one-CL vase
'Xiaoming broke a vase.'
(42) Xiǎomíng jì gěi wǒ yì-zhāng shēngrì hèkǎ
Xiaoming mail to me one-CL birthday card
'Xiaoming mailed a birthday card to me.'

The dichotomy between states and processes on the one hand and achievements and accomplishments on the other hand has led scholars such as Lin (2003a, b, 2006) and Smith and Erbaugh (2005) to employ properties of situation types to account for temporal location in Chinese. Their ideas are roughly as follows, irrespective of their differences in technical details:

(43) a. Homogenous/unbounded/imperfective situations have a present interpretation by default.
b. Heterogenous/bounded/perfective situations have a past interpretation by default.

More technically, Lin (2006) has derived the past and present interpretation of a bare sentence

by means of the definitions of perfective and imperfective aspect as given below.[ix]

(44) a. Perfective aspect = $\lambda P_{<i,t>} \lambda t_{Top} \lambda t_0 \exists t[t \subseteq t_{Top} \wedge P(t) \wedge t_{Top} < t_0]$
b. Imperfective Aspect = $\lambda P_{<i,t>} \lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge P(t)]$

What (44a) says is that the event time of an eventuality description *P* is included within a topic time t_{Top}, which is required to precede the evaluation time t_0. In contrast, (44b) says that the topic time t_{Top} is included within the event time of an eventuality description P. According to Lin (2003a, 2006), though Chinese does not have a syntactic T, every sentence is headed by a functional aspectual head ASP, which can be perfective or imperfective. This functional head fulfills the role that T plays in a tensed language. For sentences without an overt aspectual marker, the content of aspect is determined by Bohnemeyer & Swift's (2004) notion of Default Aspect to the effect that the aspect of a telic eventuality is perfective, whereas that of an atelic eventuality is imperfective. Given the above notions, imperfective sentences without a temporal adverbial in Chinese have a present interpretation because the topic time of the sentence, i.e., t_{Top}, which is the speech time by default, is included within the situation time. In contrast, perfective aspect, be it overt or covert, has the situation time included within an existentially closed topic time, which in turn precedes the evaluation time, i.e., t_0, the speech time by default. Therefore, perfective situations have a past interpretation.[x]

However, the above generalizations can be overridden by overt expressions such as temporal adverbials, aspectual markers, modals or by a discourse topic time. For example, in contrast with (39), (45) is interpreted in the past due to the temporal adverb *cóngqián* 'before', which fills in the value of the topic time variable of the aspectual head.

(45) Xiǎomíng cóngqián hěn guāi
Xiaoming before very well-behaved
'Xiaoming was well-behaved before.'

Similarly, speaker B's utterance in (46), in contrast with (40), receives a past interpretation because of the discourse topic time *xiàwǔ* 'afternoon' in speaker A's utterance.

(46) Speaker A: Nǐ xiàwǔ zài zuò shéme
you afternoon PROG do what
'What were you doing this afternoon?'
Speaker B: Wǒ zài shuìjiào
I PROG sleep
'I was sleeping.'

(47), on the other hand, has a future interpretation because of the addition of the modal

auxiliary *huì* ‘will’.

(47) Xiǎomíng huì hěn guāi
Xiaoming will very well-behaved
‘Xiaoming will be well-behaved.’

Although the above discussion is very informal, it shows how an aspect-based approach accounts for the temporal locations of Chinese bare sentences and how the information contributed by aspect interacts with other temporal expressions to derive the temporal interpretation.

6. An Aspect-based Theory of Temporality Crosslinguistically

As we saw above in the last section, rather than relying on tense, an essential ingredient of the temporal system in Chinese is the utilization of aspectual information in temporal location. An important question about such an aspect-based approach to temporal location is whether this approach is unique to Chinese or a common strategy also used in other tenseless languages. There seems to be evidence for the latter. For example, according to Bittner (2008), Kalaallisut is a grammatically tenseless language and temporal location in this language is also aspect-sensitive. She has classified eventualities in Kalaallisut into states, events, processes and habits. The temporal locations of these four types of eventualities are determined in relation to a time that is currently under discussion, i.e., the topic time in the terminology of Klein (1994). This topic time can be a topical instant for a discourse-initial sentence or a topical period inferred from the discourse. The generalizations about temporal location in Kalaallisut are as follows (Bittner 2008, p.379):

(48) Location relative to topical instant
a. A *state* includes the topical instant.
b. An *event* has a result state that includes the topical instant.
c. Stage *n* of a process has a result state that includes the topical instant.
d. A *habit* includes (but need not be instantiated at) the topical instant.

(49) Location relative to topical period
a. A *state* includes the topical period.
b. An *event* is included in the topical period.
c. Stage *n* of a process is included in the topical period.[xi]
d. A habit includes (but need not be instantiated during) the topical period.

Here are two examples to illustrate the temporal locations of states, events and processes in Kalaalilisut. In (50), the topic time is the speech moment, and in (51) the topic time of the

second clause is shifted to a topic interval, i.e., the time of the result state of the home-coming event after the first clause is uttered.[xii]

(50) State Event Process
Ole {*sinippuq* *itirpuq* *tiiliurpuq*
Ole {sinig-*pu-q,* itir-*pu-q,* *tii*-liur-*pu-q*}
Ole {be.asleep-IND.IV-3s wake.up-IND.IV-3s tea-make-IND.IV-3s}
Ole {is asleep, has woken up, is making tea}

(51) *Ataataga* *angirlarmat*
ataata-ga *angirlar-mm-at*
dad-1s.sg come.home-FCT-3s
When my dad came home,
{*sinippunga*, *itirpunga* *tiiliurpunga*}
{sinig-*pu-nga*, itir-*pu-nga*, *tii*-liur-*pu-nga*}
{be.asleep-IND.IV-1s, wake.up-IND.IV-1s, tea-make-IND.IV-1s}
{I was asleep, I woke up, I made/was making tea} (Bittner 2008, p. 370)

It is interesting to note that there is a striking similarity between Bittner's (2008) proposal of temporal location in Kalaallisut and Lin's (2003a, 2006) for Chinese. But there are also differences which are worth discussing.

Lin (2003a, 2006) did not make a distinction between a topical instant and a topical period. Instead, the dichotomy is drawn between perfective and imperfective aspect. Imperfective aspect only requires a relation between the topic time and the situation time as in (44b) to the effect that the former is included within the latter, whereas perfective aspect has an additional requirement holding between the topic time and an evaluation time, namely, the condition '$t_{Top} < t_0$', in addition to the requirement that the situation time is included within the topic time. This extra condition guarantees that perfective sentences have a past interpretation. On this analysis, the topic time variable is existentially closed when the sentence does not contain an overt temporal adverbial (see Lin 2006 for more details). The incorporation of the past condition into the semantics of the perfective aspect is reasonable, given DeCaen's (1995) observation that "perhaps the most conspicuous property of the perfective is its default past tense reading in all so-called tenseless systems". It is very likely that the perfective aspect in Chinese is actually developing from a pure aspect into a tense from a diachronic viewpoint.

In contrast with Lin (2003a, 2006), Bittner has drawn a distinction not only between eventuality types but also between a topical instant and a topical period. It is the latter where Bittner's analysis and my works crucially differ from each other. When the topic time is an instant, she resorts to the result state of an event to derive the fact that the event is in the past, namely, the event is in the past because its result state contains the speech time. Such an

interpretation is very close to English present perfect. My proposal, however, does not say anything about the result state.

The difference between Bittner's and my proposals raises a question for a tenseless analysis of tenseless languages, namely, is the difference a true one that can be captured by a parameter or is the difference perhaps only superficial and possibly to be unified under the same rule? To answer this question, let's reconsider the Chinese sentences (41) and (42), reproduced here as (52) and (53).

(52) Dìdi dǎpò yí-ge huāping
brother break one-CL vase
'The younger brother broke a vase.'
(53) Xiǎomíng jì gěi wǒ yì-zhāng shēngrì hèkǎ
Xiaoming mail to me one-CL birthday card
'Xiaoming mailed a birthday card to me.'

As noted earlier, though the above two sentences do not contain any temporal marker, both have a past interpretation. However, a past interpretation is compatible with either a past tense reading or a present perfect reading. So the question is whether (52) and (53) imply that the result state of the event denoted by the verb holds at the speech time. It seems that it can. Take (52) for instance. It can be true in the following scenario. A younger brother and his elder brother were playing and the younger brother broke a vase carelessly. So the elder brother ran to his mother, who did not know that they were playing, and uttered the sentence in (52). In this scenario, the topic instant, i.e., speech moment is contained within the result state of the vase-breaking event. Therefore, it seems that (52) implies that the result state is involved. The question is: is this implication an inherent part of the meaning of the sentence or just a conversational implicature that is cancelable in an appropriate context. Here is a test.

(54) Dìdi dǎpò yí-ge huāping， shì wǒ bāng tā nián
brother break one-CL vase be I help him glue
huí qù de
return go PAR
'The younger brother broke a vase. It's me who helped him glue them back.'

There are speakers who accept this sentence without problems. However, when uttered out of blue, (54) sounds better when a temporal adverbial denoting a past interval such as *jīntiān xiàwǔ* 'this afternoon' is added. If an implicit or explicit topic period is always required for

(54), then this example will not constitute a counter-example to extend Bittner's approach to temporal location in Chinese.

In contrast, example (55) is a sentence more readily acceptable when used as a discourse-initial statement, where the result state of the card being transferred to the speaker's possession is canceled.

(55) Xiǎomíng jì gěi wǒ yì-zhāng shēngrì hèkǎ
Xiaoming mail to me one-CL birthday card
dànshì wǒ bǎ kǎpiàn tuìhuí qù le
but I BA card return go ASP
'Xiaoming mailed a birthday card to me, but I returned it to him.'

In this example, the discourse-initial clause must not have a result sate that still holds at the speech time.

The above judgments for (54) and (55) are quite subtle, so I am hesitant to draw a definite conclusion from them. If examples such as (54) and (55) are acceptable only under orientation to a topic period, be it explicit or implicit, such as a past temporal adverbial, then Chinese might pattern with Kalaallisut and Lin's (2006) analysis of Chinese and Bittner's (2008) proposal for Kalaallisut should be able to be unified. On the other hand, if a topic instant is a fully acceptable topic time for (54) and (55), then a parameter will be needed to account for the cross-linguistic variation between Kalaallisut and Chinese. In this case, the topic time for a perfective sentence in Chinese should be constrained to precede an evaluation time as in Lin's (2006) proposal, whereas the topic time for an eventive sentence in Kalaallisut is required to fall within the result time of the event as in Bittner's (2008) analysis. Whatever the choice is, the data in Chinese and those in Kalaallisut have provided strong empirical evidence for an aspect-based approach to the temporality of a tenseless language.

7. Challenges for establishing Tenseless Languages

As noted above, the most important criterion of judging whether or not a language is tensed is the obligatory presence of a grammaticalized tense morpheme. On the basis of this type of evidence, for example, Shaer (2003) and Bittner (2005) have argued that West Greenlandic (Kalaallisut) is a tenseless language and Nowak (1994) that Baffin Island Inuktitut is likewise tenseless. According to Shaer (2003), in West Greenlandic a sentence without a temporal morpheme may receive either a past or present interpretation and the presence of a past

temporal adverbial, though triggering a past interpretation, does not require the presence of a temporal morpheme. This is illustrated by (56).[xiii]

(56) a. aggirpuq
Come.IND-3s
'He is/was coming.' (Shaer 2003, p.146)
b. juuli-up aappa-a-ni Nuum-miip-punga
July.ERG second.its.LOC Nuuk.be-in-IND.1s
'I was in Nuuk on the second of July 2nd.' (Shaer 2003, p.147)

However, as pointed out by Shaer (2003), the mere absence of an obligatory tense morpheme in a given language cannot guarantee that the language is a tenseless language, as there is always a possibility of postulating a null tense morpheme. This possibility would make a superficially tenseless language a tensed one with an obligatory and grammaticalized tense morpheme. Indeed, this is Matthewson′s (2006) approach to St'át'imcets (Lilloet Salish), which like West Greenlandic lacks overt tense morphology.

7.1 Matthewson's tensed analysis of St'át'imcets

Like West Greenlandic, superficially tenseless sentences in St'át'imcets can be interpreted as either present or past, as illustrated by the examples in (57).

(57) a. táyt-kan
hungry-1SG.SUBJ
'I was hungry/ I am hungry.'
b. k'ác-an'-lhkan
dry-DIR-1SG.SUBJ
'I dried it/ I am drying it.'
c. sáy'sez'-lhkan
play-1SG.SUBJ
'I played / I am playing.' (Matthewson 2006: 676)

According to Matthewson, stative predicates strongly prefer present tense interpretations, while accomplishments and achievements strongly prefer past interpretations. Activities can be freely intepreted either way. However, beyond the default interpretations, all superficially tenseless predicates may allow either a present or past interpretation regardless of the aspectual class.

Another important fact of St'át'imcets, as observed by Matthewson, is that superficially tenseless sentences such as those in (57) cannot be used to describe future eventualities.

Moreover, adding a future-denoting temporal adverbial to them does not give rise to a future reading, but leads to ungrammaticality as witnessed by (58). To describe a future eventuality, overt marking such as *kelh* is obligatory as (59) shows.[xiv]

(58) *táyt-kan natcw
hungry-1SG.SUBJ one.day.away
'I will be hungry tomorrow.' (Matthewson 2006, p. 677)

(59) táyt-kan kelh
hungry-1SG.SUBJ kelh
'*I was hungry/*I am hungry/I will be hungry.' (Matthewson 2006, p.678)

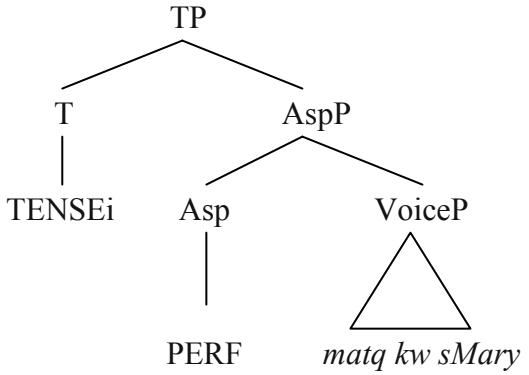
Matthewson has argued that the future morpheme *kelh* is neither an irrealis marker nor an epistemic modal but the overt spell-out of the morpheme WOLL as originally proposed by Abusch (1985) for English, because it behaves like English *will*/*would* in all aspects.[xv]

As mentioned above, like West Greenlandic, superficially tenseless sentences in St'át'imcets may be interpreted as either past or present. However, unlike Shaer′s (2003) tenseless analysis of West Greenlandic, Matthewson (2006) has proposed a tensed analysis of St'át'imcets, arguing that all superficially tenseless sentences in St'át'imcets contain a phonologically null tense morpheme, TENSE, which restricts the possible values of the reference time to a non-future interval as defined in (60).[xvi] On this definition, the temporal meaning of (61) is calculated in (62).

(60) $[[\text{TENSE}_i]]^{g,c}$ is only defined if no part of g(i) is after t_c (the utterance time).
If defined, $[[\text{TENSE}_i]]^{g,c} = g(i)$.

(61) matq [kw s-Mary]
walk [DET NOM-Mary]
'Mary walked / Mary is walking.'

(62) a.



b. $[[(62a)]]^{g,c} = \lambda w \exists e[\text{walk}(e)(w) \,\&\, \text{agent}(\text{Mary})(e)(w) \,\&\, \tau(e) \subseteq g(i)]$
(where no part of g(i) follows t_c).

c. There is an event e of Mary walking, whose running time τ is included in the contextually salient non-future time g(i).

According to Matthewson (2006, note 4 and page 683), imperfective aspect is overtly marked in St'át'imcets. Absence of the overt imperfective marker indicates the perfective aspect. That's why the aspect in (62a) is perfective, which requires that the event time is included within the reference time. The result of the final semantic composition is the logical form in (62b), which is equivalent to the statement made in (62c). According to Matthewson, the meaning given in (62b=57c) predicts that (61) can be interpreted in the past or in the present, depending upon whether the discourse has a past reference time or present reference time.[xvii] On this analysis, the only difference between English and St'át'imcets is that the tense morpheme in the latter is slightly less restrictive than English past tense morpheme.

As for the future morpheme *kelh*, Matthewson has proposed that it has the denotation of WOLL given in (63):

(63) $[[\text{WOLL}]] = \lambda P \in D_{<i,st>}.\lambda t.\lambda w.\exists t'[t < t' \ \& \ P(t')(w) = 1]$

Under this analysis, it is predicted that a (matrix) clause with *kelh* may get a *will* or *would* reading, depending upon whether the contextually salient reference time, i.e., the denotation of tense, is prior to the speech time or includes the speech time. This prediction, Matthewson argues, is correct.

7.2 A tensed analysis of Chinese

Matthewson's tenseless analysis of St'át'imcets, if correct, implies that a superficially tenseless language can be analyzed as a tensed language, because a grammaticalized tense may be phonetically inaudible but semantically interpretatable. Such a null tense analysis constitutes a great challenge for linguists who want to argue for the existence of a true tenseless language, because for any superficially tenseless language, two analyses should be compared, one being a tensed analysis and the other a tenseless one. It is beyond the scope of this chapter to discuss whether St'át'imcets can be analyzed as a syntactically tenseless language and to compare it with Matthewson's tensed analysis. Instead, a tensed alternative analysis of Chinese will be outlined and briefly compared with a tenseless analysis.

As we saw earlier, in Chinese it is difficult to find any obligatory overt morpheme that gives a two-way split between a present vs. non-present, a past vs. non-past or a future vs. non-future interpretation. Therefore, the only possibility for a tense morpheme is to postulate a phonetically inaudible null tense. For example, following Matthewson's suggestion for St'át'imcets, it can be assumed that the null tense in Chinese also introduces an indexed

TENSE variable whose value is determined by the context and is constrained to be a non-future interval as given in (64).

(64) Chinese Null Tense
[[TENSE$_i$]]^{g,c} is only defined if no part of g(i) is after t_c. If defined, [[TENSE$_i$]]^{g,c} = g(i).

Now consider a stative sentence such as (65).

(65) Zhāngsān zài bàngōngshì
Zhangsan in office
'Zhangsan is in his office.'

Let us assume with Lin (2003b, 2006) that bare homogeneous (atelic) VPs in Chinese are associated with an imperfective aspect, which requires an inclusion of the topic time within the event time. Since the value of the null tense, i.e., g(i), becomes the topic time later in the semantic computation after lambda conversion when the denotation of AspP meets the denotation of TENSE, i.e., g(i), this means that the value of g(i) is included within the event time. In (65), the value of g(i) must be the speech time, because this is the only salient time available when (65) is uttered out of the blue. As a result, (65) must have a present interpretation, because the speech time is included within the event time.

The same sentence, however, may have a past or future interpretation depending upon the context of utterance. For example, consider the following discourse.

(66) Speaker A: Nǐ xiàwǔ sān diǎn zài nǎlǐ ?
you this.afternoon three o'clock at where
'Where were you at three o'clock this afternoon?'
Speaker B: Wǒ zài bàngōngshì
I at office
'I was in my office.'

In (66), the value of g(i) in Speaker B's utterance must be a past interval, because speaker A's utterance has made the past time interval denoted by *xiàwǔ sān diǎn* '3 o'clock this afternoon' the most salient one in the discourse. This past interval is asserted to be included within the event time. Therefore, speaker B's utterance in (66) is correctly predicted to be an assertion about a past interval.

What about the future interpretation? The dialogue in (67) shows that a stative sentence may have a future interpretation.

(67) Speaker A: Nǐ xiàwǔ zài jiā mā？
you this.afternoon at home PAR
'Will you be at home this afternoon?'
Speaker B: Wǒ bù zài jiā
I not at home
'I am not at home this afternoon.'

As noted, however, such future sentences are more like English futurates rather than *will*-future. According to Copley (2009) and Smith (2010), the futurate is about the present rather than the future. It is evaluated at the speech time. The future temporal adverbial in such sentences is the event time of the predicted future event rather than the topic time. Details put aside, if Smith and Copley are correct, speaker B's utterance in (67) can be analyzed the same way as in their analyses with g(i) being the present moment. So Chinese futurates can be covered under the null tense analysis given in (64).

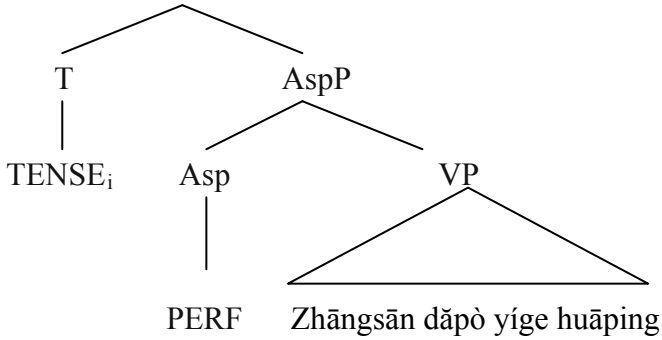
When a future sentence is not about a planned or scheduled event, the modal *huì* 'will' 'will' or other epistemic modals are used. Such future sentences can be explained as follows. As noted by many linguists, unlike the present and the past, the future always involves uncertainty and hence a modality word must be used to express that uncertainty. I believe that this is the case in Chinese.[xviii] Under the proposed tensed analysis, this then means that the value of g(i) is associated with the modal rather than with the complement embedded to the modal. By default, g(i) is the speech moment. So normally a sentence with an epistemic *huì* 'will' or other modals has the present moment as the temporal orientation of the modal. On the other hand, the temporal interpretation of the complement is specified by the meaning of the modal. Therefore, sentences with a modal are not a problem to the tensed analysis, either.

Above, we have considered how a null tense analysis might deal with homogeneous (atelic) sentences, including sentences with a modal. Now let us turn to heterogeneous (telic) sentences. Consider the following sentence, which has only a past interpretation.

(68) Zhāngsān dǎpò yíge huāping
Zhangsan break one vase
'Zhangsan broke a vase.'

As noted, telic predicates in Chinese are associated with perfective aspect by default. Now if we assume the standard semantics of perfective aspect as given in (69), which requires that the event time is included within the topic time, then the semantic computation of (68) is as follows.[xix]

(69) Perfective aspect = $\lambda P_{<i,t>}\, \lambda t_{Top} \exists t[t \subseteq t_{Top} \wedge P(t)]$
(70) a. TP



b. $[[(68)\ ]]^{g,c} = \exists t \exists x[break(x)(Mary)(t)\ \&\ vase(x)\ \&\ t \subseteq g(i)]$

c. There is a time *t* at which Mary breaks a vase and *t* is included within the contextually salient time g(i).

When (68) is a discourse-initial statement, g(i) must be the speech time, because this is the only salient time available. The analysis thus predicts that the vase-breaking event is included within the utterance time.[xx] This prediction, unfortunately, is incorrect, because (68) does not have a present interpretation, even though a vase-breaking event is an instantaneous one. This prediction of the tensed analysis crucially differs from a tenseless analysis as proposed in Lin (2006). In that framework, (68) does not have a present interpretation, because perfective aspect in Chinese has a precedence condition as part of its inherent meaning as defined in (44a). It is this condition that makes a telic sentence always denote a past situation. On this point, a tenseless analysis has a plus but a tensed analysis has a minus.

Above some problems with a tensed analysis were discussed with respect to simple sentences. In fact, a tensed analysis would encounter similar difficulties with respect to the temporal interpretation of an embedded clause. Consider (71), taken from Lin (2006).

(71) Wo jian-guo yi-wei zai ku de nanhai
I meet-Asp one-Cl Prog cry Rel boy
(i) 'I met a boy who was crying.'
(ii) '*I met a boy who is crying.'

As discussed in Lin (2006), when an imperfective relative clause is embedded to an indefinite DP, the event time of the relative clause is temporally dependent upon the event time of the matrix clause, i.e., the time of the event denoted by the relative clause must be simultaneous with the time of the matrix event. It is argued there, within a framework of a tenseless analysis, that the present interpretation is blocked because an indefinite with a progressive relative is somehow prohibited from adjoining to IP. Therefore, the speech time cannot be the topic time of the relative clause. In contrast, the dependent reading is derived when the indefinite is adjoined to VP within the scope of Asp. The point now is that within a tensed free variable analysis, it is not clear why the present interpretation is not available, given that the speech time can be salient enough to serve as a value of the free variable introduced by the null tense.

Given this, it seems that a tenseless analysis has another plus, but a tensed analysis has another minus.

There might be some more different predictions between a tensed analysis and a tenseless one, but it is not the purpose of this chapter to say which type of analysis is ultimately the correct one. To decide which is a better one, one not only has to compare the empirical coverage comprehensively but also need to evaluate which analysis is theoretically more elegant. This, certainly, is beyond the scope of this chapter. What I hope to have shown here is what one should pay attention to in analyzing a tenseless language.

8. Conclusion

In this chapter, the syntax and semantics of some (potentially) tenseless languages have been reviewed. It has been shown that tenselessness has effects on both the syntax and semantics of a tenseless language. Syntactically, a tenseless language may lack some syntactic properties that are associated with the content of tense such as lack of case-motivated NP movement or allow certain syntactic constructions such as sentences without a subject or bare nominal predicate without a copula. Semantically, since there is no tense, temporal location must be determined by something else. In this chapter, it has been shown that aspectual information, together with topic time resolution determined by an overt temporal adverbial or discourse anaphora, plays a significant role in determining temporal location in a tenseless language. Such an aspect-based approach to temporal location in tenseless languages can be as precise as a tense-based approach to temporal location in tensed languages. In addition, this article also discusses a possible challenge for establishing a tenseless language, namely, the possible existence of a null tense. It has been shown that this possibility should always be borne in mind in discussing tenselessness.

Tenseless languages may show variation as to how aspectual information is used among them. This point has been illustrated when Kalaallisut was discussed in comparison with Chinese. Although the temporal interpretations in both languages are sensitive to aspectual classes, there might be a parameter with respect to what component of an event interacts with the topic time. In Kalaallisut the result state of an event interacts with a topical instant, but this might not be the case in Chinese.

Since tenseless languages do not have overt morphosyntactic forms to constrain the location of the topic times vis-à-vis utterance times. The question arises as to how the topic times is detemined by a speaker of a tenseless language. This is an important issue but is not discussed in detail in this chapter. Most of the time, it was assumed that the speech time is the default topic time or the topic time is the time of a temporal adverbial, if there is one. That assumption is sufficient for our discussion in this chapter, but it is worth pointing out that there can be a theory of topic time resolution in the absence of explicit coding. For example, Bohnemeyer (2009) has defended a proposal in which topic time resolution relies on universal

"inference mechanisms of temporal anaphora", which are also shared with tenseless languages. If this is the case, tenseless languages should be minimally different from tensed languages in the sense that a syntactic tense node only serves to facilitate topic time reference resolution, but determination of a topic time reference in tenseless languages is more a matter of pragmatics.

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This paper discusses the word order problem of durative and completive time phrases in Mandarin Chinese. Durative time phrases must occur in a postverbal position, whereas completive time phrases are always preverbal. This paper proposes a novel way to look at this word order problem, arguing that the different word orders of completive and durative time phrases may follow from the assumption that they are telic polarity items (TPI's) and atelic polarity items (API's), respectively, and that TPI's are licensed by virtue of being in a specifier-head agreement relation with a telic head whereas API's are licensed by virtue of being c-commanded by an atelic licensor whose maximal projection it adjoins to.

Key words: durative time phrases, completive time phrases, polarity items, polarity licensing

1. Introduction

Durative adverbials such as *for 2 hours* and completive adverbials such as *in 10 minutes* are often used to test atelicity and telicity value of a situation as the following examples show:

(1) John slept for 2 hours/*in 2 hours.
(2) John wrote a letter *for 10 minutes/in 10 minutes.

For-adverbials are compatible with atelic situations, whereas *in*-adverbials are compatible with telic situations. In English both *for*-adverbials and *in*-adverbials occur VP-finally and the semantic interpretations are differentiated by means of the preposition *for* and *in*.

Unlike English durative and completive adverbials, Chinese durative and completive adverbials are not differentiated via a preposition but by means of their word order. Both durative and completive adverbials take the form of a bare NP. Durative adverbials must occur in a postverbal position, whereas completive adverbials occur in a preverbal position. Here are some examples to illustrate durative adverbials.

(3) Zhangsan shui-le liang-ge xiaoshi
Zhangsan slept-Asp two-Cl hour
'Zhangsan slept for two hours.'
(4) a. Zhangsan kai-le shi nian jichengche
Zhangsan drive-Asp ten year taxi

'Zhangsan drove a taxi for 10 years.'

b. Zhangsan kai-le jichengche shi nian
Zhangsan drive-Asp taxi ten year
'Zhangsan drove a taxi for 10 years.'

(5) a. Zhangsan dakai chuanghu ershi fenzhong
Zhangsan open windown 20 minutes
'Zhangsan opened the window and the window was open for 20 minutes.'

b. Zhangsan jiehun san nian le
Zhangsan marry 3 year Asp
'Zhangsan has been in a marriage state for 3 years.'

(3) contains an intransitive activity verb and the durative NP measures the time length of the activity denoted by the intransitive verb. (4) is a transitive sentence. A durative NP may either precede or follow the object NP. In either case, the durative NP measures the time length of the activity. Unlike (3) and (4), which involve atelic situations, the two examples in (5) denote telic situations with a result state. In such examples, the durative phrase measures the time length of the result state rather than the time length that the whole situation takes.[21] In other words, the time phrases in (5a) and (5b) are not interpreted as an *in*-adverbial but still a *for*-adverbial.

In contrast to postverbal time phrases, preverbal time phrases such as those in (6) are interpreted as *in*-adverbials rather than *for*-adverbials. Moreover, they are incompatible with atelic situations.[22]

(6) a. *Ta yi xiaoshi shui-le
he one hour sleep
'He slept for one hour.'

b. *Ta shi nian kai-le jichengche
ta 10 year drive-Asp taxi
'He drove a taxi for 10 years.'

(7) a. Ta shi fengzhong (jiu) xie-hao yi-feng xin
he 10 minute Par write-complete one-Cl letter
'He wrote a letter in 10 minutes.'

b. Ta yi nian xie-le liang-ben shu
he one year write-Asp two-Cl book
'He wrote two books in two years.'

[21] See Lin (2008) for more discussion of this point
[22] See section 7 for a discussion of some apparent counterexamples.

The contrast between (3)-(5) and (6)-(7) poses a very interesting question in Chinese syntax which has never been addressed, namely, what is it that forces durative phrases to be postverbal and completive adverbials to be preverbal? In this paper, I will propose a novel way to look at Chinese durative and completive NPs, which might shed a light on the word order issue under discussion. I will suggest that durative and completive adverbials are both polarity items, the difference being that the former are licensed by means of a c-command relation, whereas the latter are licensed by virtue of being in a Spec-head relation.

This article is organized as follows. Section 2 discusses how different polarity items may be licensed cross-linguistically. Section 3 suggests that durative and completive time phrases are polarity items which are subject to different licensing mechanisms. Section 4 is a brief introduction of Borer's (2005) analysis of (a)telicity. Based on the assumption made in section 4, sections 5 and 6 proceed to show how the word order of durative and completive phrases is accounted for in terms of polarity licensing. Section 7 examines an apparent counterexample to the observation that durative phrases can only be postverbal. Section 8 concludes this article.

2. Licensing Negative Polarity Items

It is usually assumed that a negative polarity item (NPI) such as English *anybody* must be licensed by a c-commanding negator. Therefore, (8a), where *anybody* is the object of the verb, hence c-commanded by *not*, is well-formed, whereas (8b), where *anybody* is the subject of the sentence, which is outside the scope of the negator, is ungrammatical.

(8) a. I didn't see anybody.
b. * Anybody didn't see me.

Despite the standard assumption about NPI licensing, it has been argued that a c-command requirement might not be the only way to license an NPI. Based on the data in Moroccan Arabic (MA), Benmamoun (1997) argues that NPIs in this language must be licensed overtly and can be licensed either when it is c-commanded by negation or is in Spec-head relation with it. In MA, sentential negation is usually expressed by two morphemes: *ma*, which is a prefix on the lexical verb or auxiliary, and *š*, which occurs as a suffix. This is illustrated by (9).

(9) **ma**-ktəb-**š**
ma-wrote.3MS-š
'He didn't write.' (Benmamoun 1997: 264)

However, Benmamoun (1997) points out that in some Arabic dialects such as Sudanese and Syrian, sentential negation is expressed by *ma* only as in (10).

(10) Sudanese
mā-fihim
neg-understood.3MP
'He didn't understand.' (Benmamoun 1997: 265)

Thus, he proposes that *ma* is the head of a negative projection located between TP and VP and *š* is a specifier or adjunct of a lower projection. Moreover, the verb moves from V to T, carrying *ma* with it along its way up and *š* cliticizes to the verbal complex.

In MA, NPI's such as *ħətta* + NP are in complementary distribution with *š* but *ma* is obligatory when an NPI occurs. This is illustrated by the following examples.

(11) a. ma-qrit ħətta ktab
neg-read.1S even book
'I didn't read any book.'
b. *ma-qrit-š ħətta ktab
neg-read.1S even book
'I didn't read any book.' (Benmamoun 1997: 269)

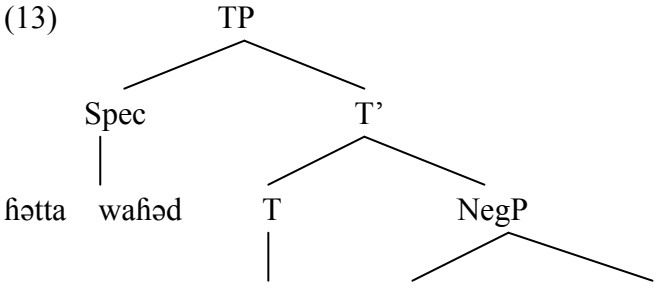
In (11a), the NPI *ħətta ktab* 'any book' is c-commanded by the negation contained within the verbal complex in T or by the trace in the head of NegP.

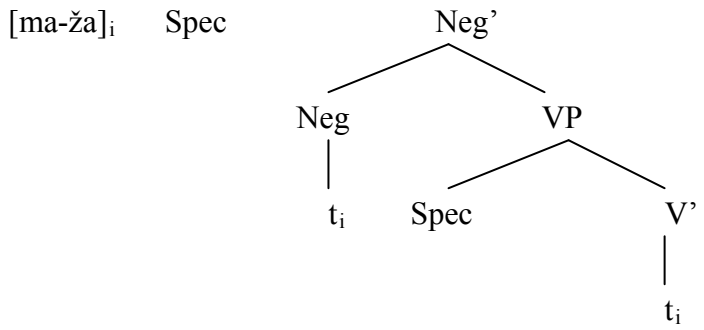
However, according to Benmamoun, the same NPI in MA may also occur in a preverbal position as subject, as shown below.

(12) ħətta waħəd ma-ža
even one neg-came.3MS
'Anyone didn't come.' (Benmamoun 1997: 272)

If the subject NPI *ħətta waħəd* 'anyone' is assumed to occupy the SpecTP as shown in (13), it is not c-commanded by negation contained in the verbal complex or its trace.

(13)





Benmamoun thus suggests that Spec-head agreement may also license an NPI in MA as given below:

(14) An NPI is licensed if:
(a) it is c-commanded by Neg or
(b) it is in Spec-head agreement with Neg or an element containing Neg.

Benmamoun (1997) is not the only one who has argued that the Spec-head relation may license an NPI. Ouali (2005) has a similar proposal for Berber dialects, arguing that while NPI's like *no one* and *nothing* in Berber are licensed via c-command, NPI adverbs like *never* are licensed via Spec-head relation. I will illustrate with Tamazight dialect of Berber. In this dialect, sentential negation can be expressed either by means of a single obligatory pre-verbal negative marker *ur* as in (15) or by means of two negative markers *ur* and *sha*, which can be either postverbal or preverbal as in (16a) and (16b).

(15) ur iddi wrba gher-skeela
neg 3s.went boy to-school
'The kid didn't go to school.'
(16) a. ur ughax sha lkthaab
neg 1s-bought-1s neg book
'I did not buy the book.'
b. shaur dix gher-s
neg-neg go.past.1s to-him
'I didn't go to him/I didn't visit him.'

Ouali follows the standard assumption that the negation marker *ur* heads its own maximal projection and is higher than IP/TP in Berber. By contrast, *sha* is adjoined to VP and moves to SpecNegP later in the derivation, overtly or presumably at LF.

According to Quali, NPI's like *agidge* 'no one' in Tamazight are licensed in situ when c-commanded by Neg as in (17). However, such NPI's may undergo topicalization as in (18) after being licensed, exhibiting a neutral form of agreement, which shows that they are not in

SpecNegP but in a CP periphery position.[23]

(17) ur iddi agidge
Neg go-perf-3s no one
'No one left.'
(18) agidge ur iddi-n
No one neg go-Perf-NEU
'No one left.'

On the other hand, NPI adverbs like *urdgin* and *ursar* 'never' are licensed by Spec-head relation.[24] They can only occur in a position preceding Neg and the verb as shown by the contrast between (19a) and (19b).

(19) a. ursar ur t-ughex
Never neg it-buy.Per.1s
'I will never buy it.'
b. *ur t-ughex usar
neg go.perf.1s never
'I will never buy it.'

However, these NPI adverbs may not occur with *sha*, regardless of whether *sha* stays in situ or moves overtly to SpecNegP, as shown in the following examples:

(20) a. urdgin (*sha) ur dix (*sha) gher frans
never (*neg) neg went-Perf-3s Neg go France
'I have never been to France.'
b. ursar (*sha) ur i-th3lith (*sha)
never neg neg me see-Imp-3s neg
'You will never see me.'

This fact is explained if NPI adverbs occupy the position of SpecNegP and are licensed there. According to Ouali (2005), *sha* can only be licensed via the Spec-head relation with the head Neg. Consequently, if SpecNegP is occupied by some other element, the derivation crashes.

So far we have seen two languages in which NPI's may be licensed via either c-command or the Spec-head relation, sometimes depending on what kind of NPI is involved. I now turn to Chinese NPI's. The most well-known NPI in Chinese is *renhe* NP 'any NP'.

[23] See Ouali (2005, section 5 for more discussion for evidence that the NPI *agidge* in (18) does not move through SpecNegP or stays in SpecNegP.
[24] *Urdgin* is used when the verb is imperfective and *ursar* is used when the verb is perfective.

This NPI can only be licensed by virtue of being c-commanded by its licensor. For example, the object NP *renhe xuesheng* 'any student' in (21a) is c-commanded by the negation word *mei* 'not' and the sentence is well-formed. By contrast, the subject NP *renhe xuesheng* 'any student' in (21b) is not c-commanded by the negation word *mei* 'not' and is hence not licensed.

(21) a. Wo mei jiandao renhe xuesheng
I not see any student
'I did not see any student.'
b. *Renhe xuesheng mei jiandao wo
any student not see me
'Any student didn't see me.'

However, not every NPI in Chinese is c-commanded by its licensor. The most well-known case is *conglai* 'ever'. As (22) shows, *conglai* 'ever' cannot occur in an affirmative sentence and when it occurs in a sentence, it can only occur right before a negation word, as the contrast between (23a) with (23b) shows.

(22) *Ta conglai shuo huang
he ever say lie
'He ever tells lies.'
(23) a. Ta conglai bu shuo huang
he ever not say lie
'He never tells lies.'
b. *Ta bu conglai shuo huang
he not ever say lie
'He never tells lies.'

In addition to *conglai* 'ever', there are other degree adverbs which pattern alike. *Sihao* 'a bit' is one of them, as the examples below illustrate.

(24) a. Ta sihao bu yanshi ziji-de quedian
he a-bit not cover-up self-Gen shortcoming
'He does not cover up his own shortcoming a bit.'
b. *Ta sihao yanshi ziji-de quedian
he a-bit cover-up self-Gen shortcoming
'He covers up his own shortcoming a bit.

Note that not every degree NPI adverb occurs before a negation word. For example, *zenme*

'how' when interpreted as a degree word is an NPI and it must follow, hence c-commanded by, the negation word.

(25) a. Ta bu zenme titie
he not how considerate
'He is not very considerate.'
b. *Ta zenme bu titie
he how not considerate
c. *Ta zenme titie
he how considerate
'He is very considerate.'

So NPI adverbs in Chinese can also be divided into two types. One type of NPI adverbs such as *zenme* 'very/much' must follow the negator and be licensed by virtue of being c-commanded by it. Another type of NPI adverbs such as *conglai* 'ever' and *sihao* 'a bit' can only appear immediately before the negative word. I propose that such NPI's are licensed by virtue of being in the Spec-head relation with the negator (See also Hsiao 2002). Therefore, Chinese are like Moroccan Arabic and Berber in having two strategies for licensing NPI's, depending upon what kind of NPI is involved.

3. Durative and Completive NPs as Polarity Items

In the last section, we saw that NPI adverbials in Chinese may either precede or follow their negative licensor depending upon individual lexical specification. Some NPI adverbials such as *conglai* 'ever' and *sihao* 'a bit' must precede a negator. These NPI adverbials are licensed by virtue of being in the Spec-head relation with the negator. Some other NPI adverbials such as *zenme* 'how' must follow the negator. These NPI adverbials are licensed via a c-command relation.

As noted, Chinese time phrases may either precede or follow the verb. When they are postverbal, they must modify an atelic eventuality, measuring the time interval that the eventuality lasts; when they are preverbal, they are compatible only with eventualities with a telos, indicating the time interval for the whole situation to reach its telos. Since durative and completive time phrases are each compatible with a certain type of situation, they can be regarded as polarity items. More precisely, durative time phrases are Atelic Polarity Items (API's), whereas completive time phrases are Telic Polarity Items (TPI's).

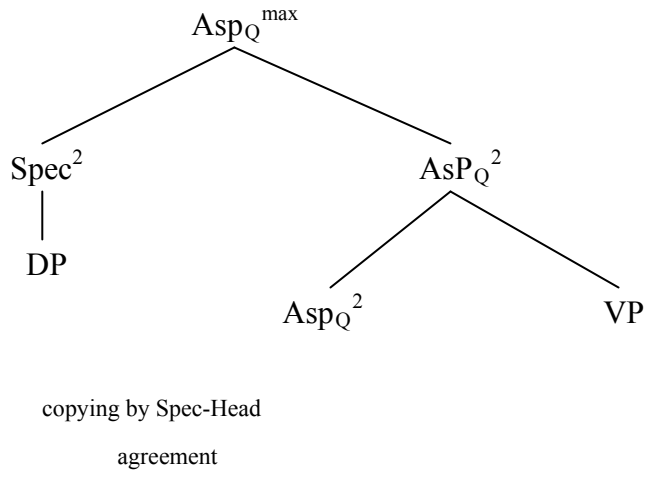
I propose that API's and TPI's are licensed by means of different strategies. API's are licensed by virtue of being c-commanded by an atelic licensor in much the same way as NPI's such as *renhe* NP and *zenme* 'how' are licensed. By contrast, TPI's are licensed by virtue of being in the specifier-head relation to their licensors in much the same way as *conlai* 'ever'

and *sihao* 'a bit' are licensed. In other words, durative time phrases are parallel to *zenme*-type of NPI and completive time phrases are parallel to *sihao*-type of NPI. In what follows, I will spell out the details of the analysis.

4. Structuring (A)Telicity

To execute the licensing of ATI's and TPI's as proposed in the last section, I will adopt Borer's (2005) analysis of (a)telicity. She proposes that telicity is expressed in terms of the syntactic projection Asp_Q^{max}, which is responsible for telic interpretation. The DP in the specifier position of Asp_Q^{max} is the "subject-of-structured change". Asp_Q and its VP complement constitute a quantity (telic) predicate, as shown below.

(26)



Subject of quantity Quantity Predicate

According to Borer (2005: 75), English verbal stems are inherently without quantity and thus in the absence of quantity structure are atelic. They are embedded within a quantity phrase, labeled Asp_Q^{max} as shown in (26), which is headed by an open value [Asp_Q <e>#] in need of range, i.e., telicity, assignment. Range assignment to [Asp_Q <e>#] can be mediated through Spec-head agreement between a quantity DP in the specifier of Asp_Q^{max} and its head Asp_Q^0. If the DP in the specifier of Asp_Q^{max} is a quantity DP, the quantity property can be copied onto [Asp_Q <e>#], forming a well-formed [[$_{Spec\ AspP}$ DP] [Asp_Q]] and making the Asp_Q and its

c-command domain of a quantitiy or telic predicate.[25] In addition, in the presence of direct range assignment such as the verbal prefix in Slavic languages, Asp_Q could be well-formed without a quantity DP in its specifier.

The node occupied by Asp_Q might be semantically vacuous, perhaps having only case-assigning properties. In this case, the node under discussion is not a semantically contentful projection. Borer uses F^sP, headed by Fs, to represent such a projection. According to Borer, the merger of F^s blocks a telic interpretation, forcing a transitive derivation with a direct object marked as partitive in languages such as Finnish. She also suggests that object arguments in such structures are assigned a default participant interpretation. An important conclusion of Borer's analysis is thus that the atelic interpretation is the result of the absence of a dedicated structure, namely, Asp_Q and there is no atelic structure as such. Apart from the above analysis, Borer (2005: chapter 3, note 14) also assumes that English verbs undergo overt short movement to a position higher than Asp_Q and movement of the object is also overt as in Runner's (1995) extensive discussion.

5. Licensing API's

There have been different analyses of the syntax of Chinese durative phrases. Tang (1990, 1994) has assumed that direct objects are projected in the specifier position of VP and the verb is moved to a higher functional head. Durative phrases can be adjoined to VP, as is shown in (27).

(27) [FP F [VP Duration [VP Object [V' V Duration]]]

In (27), when the verb is raised to the functional head F, the durative-object order is derived. However, according to her, durative phrases in Chinese can also be projected under the minimal V' as the complement of V in conformity with Larson's (1988) idea that oblique expressions may be base-generated as the complement of V. This assumption will derive the object-durative order. Details aside, Lin (2008) has a proposal somewhat similar to Tang's suggestion of adjoining durative phrases to VP and moving the verb to a higher functional head.[26] In addition, his analysis specifically requires that durative phrases can only adjoin to a homogeneous projection. To simplify the space, let us assume that a treatment of durative phrase along this line is correct. Furthermore, let us also assume that the verb moves overtly to $AspQ/F^s$ or higher.

Let us now consider how the word order of durative phrases can be explained. Recall

[25] For the definition of quantity DPs, see Borer (2005: 74).
[26] What Lin (2008) actually proposes is that durative phrases may be adjoined to any homogeneous projection as long as it can be interpreted there. His framework can be translated to the current theoretical assumptions with some adjustments, but I will leave the exact details aside.

that a time phrase may receive a durative interpretation only when it is postverbal and a preverbal time phrase is incompatible with an atelic eventuality. To account for this fact, I would like to make the following assumptions:

(28) A. As an adverbial, a durative or completive time phrase is subject to adjunct licensing in the sense of Travis (1988) according to which adverbials are licensed by the designated feature of a head.
B. Durative phrases can only be adjoined to a homogeneous projection as in Lin (2008) and licensed by the head of that homogeneous projection.
C. Durative phrases are atelic polarity items and hence must be licensed by an atelic licensor by virtue of being c-commanded by it.
D. Completive phrases can only be adjoined to a heterogeneous projection and licensed by virtue of being in the specifier-head agreement relation with a telic head.
E. It follows from the above assumptions that a durative phrase must be postverbal and a completive phrase must be preverbal.

To illustrate how the above assumptions work, consider (3) and (4) first.

(3) Zhangsan shui-le liang-ge xiaoshi
Zhangsan slept-Asp two-Cl hour
'Zhangsan slept for two hours.'
(4) a. Zhangsan kai-le shi nian jichengche
Zhangsan drive-Asp ten year taxi
'Zhangsan drove a taxi for 10 years.'
b. Zhangsan kai-le jichengche shi nian
Zhangsan drive-Asp taxi ten year
'Zhangsan drove a taxi for 10 years.'

(3) is an intransitive activity sentence. There is no DP in Spec of Asp_Q^{max} that may Spec-head agree with the head Asp_Q, giving the latter a range assignment. Therefore, the verb must not move to Asp_Q but to some other functional projection above VP from which it c-commands the durative phrase which adjoins to VP. The durative phrase in (3) is thus properly licensed as an API.

A similar story can be told about (4). The object argument in (4) receives a default participant interpretation and is not a quantity DP. Therefore, the position to which the verb moves should not be Asp_Q, but Fs, from which it c-commands the durative phrase. So, the durative phrases in (4) are licit API's.

In contrast to (3) and (4), the durative phrases in (6a) and (6b), reproduced below, are in a preverbal position.

(6) a. *Ta yi xiaoshi shui-le
he one hour sleep
'He slept for one hour.'
b. *Ta shi nian kai-le jichengche
ta 10 year drive-Asp taxi
'He drove a taxi for 10 years.'

Logically, there are two possible positions for the durative phrases in (6a) and (6b). They are adjoined to either VP or some functional projection FP dominating VP. In either case, the verb or the functional head F to which the verb moves does not c-command the durative phrase. Therefore, the durative phrases in (6) are not properly licensed as an API.

We have so far seen how durative phrases in atelic sentences are licensed. However, as we saw at the outset of this article, postverbal durative phrases are also compatible with telic sentences. But in such cases, the durative phrase measures the time length of the result state sub-eventuality rather than the time length of the process sub-eventuality or the whole event. How are such durative phrases licensed? I turn to this now.

I assume with von Stechow (1995, 1996), Ramchand (2008), Lin (2008), among others, that telic verbs are decomposed into subcomponents overtly in syntax and hence those sub-eventualities are accessible to syntactic modification and semantic composition. For example, Ramchand (2008) has proposed that there are three sub-event projections for a lexical expression that entails a result state. These three projections are vP, VP and RP. According to Ramchand, vP is the projection that introduces the causation event and licensing different types of external argument; VP specifies the change or process sub-event and licenses the entity undergoing change or process; RP gives the telos or result state of the event and licenses the entity that holds the result state.

Given the decompositional syntax described above, I would like to follow Lin (2008) in assuming that the durative phrase in a telic sentence such as (5a), reproduced below, is adjoined to RP, the only homogeneous projection in the structure. Therefore, semantically, the durative phrase in (5a) measures the time length of the result state rather than the time length of the whole event.

(5a) Zhangsan da-kai chuanghu ershi fenzhong
Zhangsan do-open windown 20 minutes
'Zhangsan opened the window and the window was open for 20 minutes.'

The head of the result phrase must move overtly to the higher Asp_Q. The combination of the verb and the result head presumably would give Asp_Q a direct range assignment, making the interpretation telic. The structure of (5a) is something like (29).

(29) …[…[$_{AspQ}$ da$_i$ + ka$_j$]$_{i,j}$...[$_{VP}$...[$_V$ t$_{i+i}$] [$_{RP}$ ershi fenzhong [$_{RP}$...[$_R$ t$_j$]...]]]]

Now the crucial question is how the durative phrase *ershi fenzhong* 'twenty minutes' in (29) is properly licensed. To be licensed as an API, it must be c-commanded by the resultative head *kai* 'open' whose maximal projection it adjoins to. But can it? Although a resultative telic verb is made up of an activity verb and a result verb, arguably the indices of both verbs percolate. Evidence for this view is supported by the fact that there has been a hot debate in the literature concerning whether the activity verb or the resultative verb is the head of a resultative compound verb or both are the heads (See Lin (2009) for a review of this issue). Thus, I claim that the resultiave adjective of the verbal complex *da-kai* 'open' in (29) c-commands the durative phrase just as the negation contained within the verbal complex in T may c-command the NPI *ħətta ktab* 'any book' in Moroccan Arabic in (11a) discussed in section 2. This position is further supported by the fact that the resultative adjective also need to c-command the trace at its original site. Therefore, the durative phrase in (5a) is properly licensed as an API.

6. Licensing TPI's

As noted, some NPI adverbs such as *conglai* 'ever' and *sihao* 'a bit' are only licensed by virtue of being in the spec-head relation within the NegP projection but not by a c-command relation. I propose that preverbal completive time phrases are licensed as TPI's in a similar manner. As a TPI, a completive phrase must be licensed by a telic head. So a TPI is adjoined to Asp$_Q^{max}$ under our theoretical assumptions. Thus, example (7a), reproduced below, have a representation such as (30).

(7a) Ta shi fenzhong (jiu) xie-hao yi-feng xin
he 10 minute Par write-complete one-Cl letter
'He wrote a letter in 10 minutes.'

(30) …[$_{AspQ}^{max}$ shi fenzhong [$_{AspQ}^{max}$ …[$_{AspQ}$ xie-hao$_i$ [VP …ti…

Strictly speaking, the completive phrase *shi fenzhong* 'ten minutes' in (30) is not the SpecAsp$_Q^{max}$, as this position might be occupied by a DP agreeing with Asp$_Q$ in terms of quantity property. In spite of this, it is a well-known fact that adjuncts such as attributive adjectives may bear agreement relations with a noun they modify as in the following German example.

(31) Reisengroße Eisbären

huge.PL polar.bears (Svenonius 1994, example (8b))

The inflection on attributive adjectives is sometimes referred to as 'concord' rather than agreement as in Pollard & Sag (1993), who argued that the feature by which an AP 'selects' the NP which it modifies is also the feature relevant to concord. Our idea of the relation between a completive phrase and an Asp_Q^{max} to which the former attaches is of the same spirit. Given this, I would like to adopt a looser definition of specifiers according to which multiple specifiers are allowed. More precisely, it can be assumed that a phrase XP m-commanded by a head α is a specifier of α if XP is in an agreement or concord relation with α. On this assumption, the durative phrase in (30) is licensed as a TPI by virtue of being in a specifier-head relation with the head Asp_Q.

7. Apparent Counterexamples

It was noted earlier that durative phrases may not occur in a preverbal position. However, it has been pointed out that there are examples of this kind, especially when there is a contrast between two durative phrases as in (32) below.

(32) Yuehan san tian dai zai taibei, si tian zhu xinzhu
John three day stay in Taipei four day live Hsinchu
'John stays in Taipei for three days, and lives in Hsinchu for four days.'

Examples like (32) are thus counterexamples to the claim that durative phrases are API's that must be c-commanded by an atelic licensor. I would like to argue that such examples are only apparent counterexamples and the function of the preverbal time phrases in these examples is not to measure the time length of an atelic eventuality but to serve as the topic or reference time of the sentence.

To begin with, the semantics of (32) is completely identical to (33).

(33) Yuehan yi xinqi zhong you san tian dai zai taibei,
John one week out-of have three day stay in Taipei
si tian zhu xinzhu
four day live Hsinchu
'Out of a week, there are three days during/within which he stays in Taipei and there are four days during/within which he lives in hsinchi.'

Note that for (32) and (33) to be true, it actually doesn't have to be the case that John must stay in Taipei for exactly 72 hours and in Hsinchu for exactly 96 hours. Imagine the following scenario. John's home is in Hsichu but he has to work in Taipei three days a week. So he

commutes to work in Taipei every Monday morning but comes home at late night on Wednesday. In this scenario, both (32) and (33) are true. In other words, the function of the preverbal time phrases in (32) and (33) are similar to the definite topic or reference time *mingtian* 'tomorrow' and *houtian* 'the day after tomorrow' in (34).

(34) Yuehan xinqiyi dai zai taibei, xinqier zhu zai xinzhu
John Monday stay in Taipei Tuesday stay in Hsinchu
'John will stay in Taipei on Monday, and in Hsinchu on Tuesday.'

For (34) to be true, John's stay in Taipei does not have to be exactly the 24 hours of Monday; nor is it required that he must be in Hsinchu for the whole 24 hours of Tuesday.

From the above discussion, it is clear that the function of the preverbal time phrase in (32) is not to measure the exact time length of the eventuality but to serve as a time frame within or during which the eventuality is true, just as the definite topic time *xinqiyi* 'Monday' and *xinqier* 'Tuesday' in (34) do.

The above analysis may also provide a light into the question why examples like (32) always need two contrastive time phrases to make the discourse coherent. My speculation is this. A topic or reference time is usually a definite time interval. Thus, an indefinite time phrase normally may not serve as the topic or reference time of the sentence. However, if the context has another contrastive indefinite time phrase, the intervals denoted by the two contrastive indefinite noun phrases will become more salient, thus licensing them to serve as a topic or reference time.

In short, if the above remarks on examples like (32) and (33) are correct, these examples are only apparent counterexamples to the observation that durative phrases in Chinese do not occur in a preverbal position and they do not constitute a real challenge to the claim that durative phrases are ATI's that must be licensed by a c-commanding atelic licensor.

8. Conclusion

In this article I have shown that completive phrases can only occur preverbally, whereas durative phrases can only occur postverbally. I have argued that the different word orders of completive and durative phrases may follow from the assumption that they are TPI's and API's, respectively and that TPI's and API's are subject to different licensing mechanisms. Namely, TPI's are licensed by virtue of being in a specifier-head agreement relation with a telic head whereas API's are licensed by virtue of being c-commanded by an atelic licensor whose maximal projection it adjoins to. In addition, I have argued that some seemingly preverbal duratives are not real durative phrases but topic or reference time phrases during or within which an eventuality occurs.

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A Tenseless Analysis of Mandarin Chinese Revisited: A Response to Sybesma (2007)[xxi]

Jo-wang Lin

Sybesma (2007) argues for the existence of a syntactic T node in Chinese based on general theoretical considerations and parallel empirical data from Dutch and Chinese. This reply shows that a tenseless analysis of Chinese is an equally viable alternative or even a better one, given some empirical problems that the tensed analysis has to face. The tenseless analysis is backed up not only by its ability to explain the data in a more elegant way but also by syntactic facts which seem to be unrelated coincidences under a tensed analysis but are natural consequences under a tenseless alternative.

Keywords: tenseless language, tenseless analysis, temporal interpretations, Chinese

1 Introduction

It has been often claimed or assumed that Mandarin Chinese is syntactically a tenseless language in that it has no grammaticalized morphosyntactic forms that locate events or constrain topic times in the present, past or future of a reference time.[xxii] However, Sybesma (2007) has recently challenged this claim, arguing that Mandarin Chinese, just like Dutch,

should have a syntactic tense head, though it is a null one. This article aims to make some contribution to the debate between a tensed and tenseless analysis of this language. A tenseless analysis will be presented as an equally viable alternative, if not a better one than a tensed analysis, for the data discussed by Sybesma as well as other relevant data. His arguments for a tensed analysis will be reviewed in detail and shown to be not conclusive. In addition, semantic and syntactic facts will be adduced to favor a tenseless analysis over a tensed one.

2 Sybesma's (2007) Analysis

Sybesma (2007) has pointed out two reasons to doubt the claim that Mandarin Chinese (abbreviated as Chinese hereafter) has no tense (T) node. The first is a general consideration. According to him, a T node seems to be necessary to obtain temporal interpretations for current successful theories of tense and if these theories are correct and applicable to all natural languages, sentences in Chinese should also have a T node. The second reason is that Chinese sentences in isolation such as (1) have a clear temporal interpretation, in this case the present interpretation, but it is not clear where the interpretation comes from. In particular, he argues that the interpretation does not come from the context, because "there is no context" for such sentences and that only linguistic cues can do the job. Therefore, Chinese should

have a T node.

(1) Zhāngsān zhù zài zhèr 。

Zhangsan live at here

‘Zhangsan lives here.’

If Chinese has a T node, the next question to ask is what it really does. His answer is that the T node is a mere agreement morpheme, agreeing with the temporal adverbs. His arguments are based on some parallel phenomena between Chinese and Dutch. According to him, atelic predicates in Dutch with a present tense are fully acceptable, but the same predicates with a past tense sound very odd in isolation without a time adverbial.[xxiii]

(2) a. Ik woon in Rotterdam.

1s live in Rotterdam

‘I live in Rotterdam.’

b. #Ik woonde in Rotterdam

1s live.PST in Rotterdam

‘I lived in Rotterdam.’ (infelicitous in isolation)

c. Ik woonde in 1989 in Rotterdam

1s live.PST in 1989 in Rotterdam

'I lived in Rotterdam in 1989.' (Sybesma 2007: 582)

From the above data, he concludes that tense morphemes are meaningless, serving only as an agreement marker. He refers to the agreement between tense and temporal adverbs as *Tense Agreement*.

Very interestingly, Sybesma pointed out that the same pattern holds true of Chinese, as shown by the sentences in (3), though unlike Dutch Chinese has no overt tenses. He takes this similarity to mean that Chinese has the same *Tense agreement* just like Dutch.

(3) a. Wǒ zhù zài Lùtèdān 。

I live in Rotterdam

'I live in Rotterdam.'

b. #Wǒ zhù zài Lùtèdān 。

I live in Rotterdam

Intended: 'I lived in Rotterdam.' (infelicitous in isolation)

c. Wǒ 1989 nián zhù zài Lùtèdān 。

1s 1989 year live in Rotterdam

'I lived in Rotterdam in 1989.'

According to Sybesma, telic predicates in Chinese and Dutch also behave alike in that past telic events in both languages must use the perfective constructions overtly, indicating that the endpoint has been realized. He pointed out that in Chinese normally the perfective marker *le* must be used and in Dutch the prefix *ge* is used. Simply adding a past temporal adverbial does not rescue the sentence. The examples in (4) are Chinese sentences and those in (5) are Dutch ones.

(4) a. #Wǒ mǎi yì-běn shū ◦

1s buy one-CL book

Intended: 'I bought a book.' (infelicitous in isolation)

b. #Wǒ zuótiān mǎi yì-běn shū ◦

1s yesterday buy one-CL book

Intended: 'I bought a book yesterday.' (infelicitous in isolation)

c. Wǒ mǎi-le yì-běn shū ◦

1s buy-PRF one-CL book

'I bought a book.'

d. Wǒ zuótiān mǎi-le yì-běn shū ◦

1s yesterday buy-PRF one-CL book

'I bought a book yesterday.'

(5) a. #Ik kocht een boek

1s buy.PST a book

'I bought a book.' (infelicitous in isolation)

b. #Ik kocht gisteren een boek

1s buy.PST yesterday a book

'I bought a book yesterday.' (infelicitous in isolation)

c. Ik heb een boek gekocht

1s have a book buy.PST-PARTICIPLE

'I bought a book.'

d. Ik heb gisteren een boek gekocht.

1s have yesterday a book buy.PST-PARTICIPLE

'I bought a book yesterday.' (Sybesma 2007: 583-584)

According to Sybesma, the past tense marker in Dutch agrees with *ge*, i.e., the realization element *ge* is always accompanied by a tense marker. He suggests that the same is true of Chinese, i.e., *le* is accompanied by a tense marker, citing Lin's (2006) work according to which *le* is not simply aspectual but includes a tense-like component in its meaning. Sybesma does not say clearly what is behind the meaning of *le*, but his remark implies that a past tense

in Chinese requires the presence of *le* because of some kind of tense agreement.

3 Comments on Sybesma (2007)

3.1 A Response to Sybesma's First Point

Recall that Sybesma holds the view that sentences can only be interpreted if there is a T node; otherwise, the sentence won't be interpretable. Moreover, current successful theories of temporal interpretations seem to have a T node as a necessary component as part of the theory. I do not doubt that this remark applies to well-studied Indo-European languages such as English. However, if more languages in the world are taken into consideration, we will see immediately that not every theory of temporal interpretations relies on the existence of a syntactic T node. This is in particular true for tenseless languages such as Yucatek Maya and Kalallisut, which have received detailed analyses with respect to their temporal interpretations in recent years (Bohnemeyer (2002, 2008) for Yukatek Maya and Bittner (2005, 2008) for Kalallisut. These authors have utilized aspectual information or temporal (discourse) anaphora to account for the temporal interpretations without resort to a syntactic T node. Of course, the fact that other languages do not have a T node does not mean that Chinese does not have a T node, either. However, if the above authors' analyses of the

tenseless languages in question are correct, they provide evidence that a T node is not universally present in every language. Nor is it required in every successful theory of temporal interpretations. In fact, similar remarks may apply to Chinese. Lin (2003b, 2006), for example, has attempted a tenseless analysis for it. Of course, whether or not Chinese possesses a T node is not only a theory-internal decision, but an empirical question. Arguments should be given based on data on Chinese. Later in section 4, empirical data on Chinese will be presented that are in favor of a tenseless analysis over a tensed one.

3.2 A Response to Sybesma's Second Point

Recall that Sybesma remarks that one can actually observe the present or past interpretation of a sentence even when it does not have any temporal adverbial or other time-related expression, but this temporal information cannot come from the context, because "there is no context". He didn't really define what he meant by "context". If the notion of "context" means the presence of a temporal adverbial or a discourse, surely there is no context for the type of sentence under discussion. However, if "context" is understood in a normal way as in the semantics literature, an utterance in isolation still has a context, namely, the situation where the speaker is located. In particular, the speaker's here and now are part of it. Therefore, the speaker (and the addressee as well) can have access to such information and use it to interpret the sentence.

Lin (2006) argues that this is exactly what happens for sentences such as (1). (1) receives a present interpretation because the speech time is included within the event time of living here due to the imperfective aspect. A formal tenseless analysis of this type of sentence will be provided later.

(1) Zhāngsān zhù zài zhèr 。

Zhangsan live at here

'Zhangsan lives here.'

It might also be too strong a claim for Sybesma to say that *linguistic* context (material) is the only factor that influences the temporal interpretation of a sentence. The role that non-linguistic context plays in sentence interpretation can be illustrated by pronouns or demonstratives such as *you*, *I*, *he, this* or *that*. As is well known, the referents of such expressions depend heavily on non-linguistic context. For example, to really understand what "I" refers to, one needs to know who is making the utterance. If non-linguistic context may play a role in the interpretations of pronouns or demonstratives, it can do the same job for the temporal interpretations of sentences.

3.3 A Response to Sybesma's Empirical Arguments

Finally, let us consider the argument based on the parallelism between Chinese and Dutch. This argument has its point but is not conclusive, because there is no *a priori* reason to assume that morphological realization in one language must have a (null) counterpart in another language in order to obtain the same or similar final (semantic) output. In what follows, I will illustrate a parallelism between English bare plurals and Chinese bare nouns, which arguably mirrors the parallelism between tensed verbs in Dutch and bare verbs in Chinese.

It is well-known that bare plurals in English do not have a constant interpretation, as is illustrated by (6) below.

(6) a. Dogs are intelligent.

b. I saw dogs.

c. Dogs are widespread.

In (6a), the bare plural *dogs* seems to have the force of the quantifier *most* or *almost all* in that exceptions are admitted. As for (6b), the bare plural *dogs* has an existential reading. *Finally,* in (6c) *dogs* seems to refer to a kind of animal.

Chinese bare nouns behave like English bare plurals with respect to their flexibility in

interpretations. The following examples are Chinese counterparts to (6) and the bare nouns have exactly the same interpretations as their corresponding English bare plurals.

(7) a. Gǒu hěn cōngmíng ◦

Dog very intelligent

'Dogs are intelligent.'

b. Wǒ kànjiàn gǒu ◦

I see dog

'I saw dogs.'

c. Gǒu dàochù dōu shì ◦

dog everywhere all be

'Dogs are everywhere/widespread.'

The parallelism between English bare plurals and Chinese bare nouns might suggest that the latter are syntactically inflected with a plural marker just as the former are and the inflection is a null one. This is indeed a possibility. However, such a proposal is rarely heard of, possibly because it is not necessary to do so in order to obtain the correct semantic interpretations. Let us assume with Krifka (1995) and Lin (1999) that Chinese bare nouns (without postulating a null morphological plural marker) denote kinds just as Carlson (1977)

has suggested for English bare plurals.[xxiv,xxv] If Carlson (1977) is correct in suggesting that the various interpretations of bare plurals can be derived from their kind meaning via the lexical and aspectual properties of a verb, then Chinese bare nouns can obtain the various interpretations in a similar way without postulating a (null) plural morphology (cf. Chierchia 1998, Lin 1999).[xxvi]

The upshot of the above remark is that the same semantic output need not be produced by exactly the same syntactic form and this can apply to the temporal interpretations across languages, which might look similar but are derived through perhaps (slightly) different means in different languages.

In addition to the above general comment, Sybesma's arguments for *Tense Agreement* also leave room for reconsideration. As noted, he has argued that the tense morpheme in Dutch is meaningless and is a mere agreement morpheme, agreeing with a temporal adverb. So a past tense morpheme (in Dutch and in Chinese) always occurs with a temporal adverb. This analysis, however, has both theoretical and empirical problems. If tense morphemes were mere agreement morphemes, we would expect a present tense morpheme to obey the same restriction: it should agree with a temporal adverb, just like past tense morphemes do on this analysis. Apparently, this is not the case, as the Dutch sentence (2a) shows. Thus, under Sybesma's proposal of tense agreement, an inconsistency seems to exist between the present tense morpheme and the past tense morpheme. Even if the variation between a present and

past tense could be allowed, this proposal is still empirically problematic, because Chinese sentences with a past interpretation do not always require the presence of a temporal adverbial denoting a past interval. Such sentences actually abound. Examples (8)-(14) to be discussed later are all counterexamples to Sybesma's claim.

In fact, one doesn't have to resort to tense agreement to explain why the past interpretation in Dutch and Chinese is infelicitous when a sentence without a temporal adverb is uttered in isolation. According to Lin (2003b, 2006), examples such as (3a), reproduced below, have a present interpretation because the default topic (reference) time provided by the utterance context is the speech time.

(3a) #Wǒ zhù zài Lùtèdān ◦

I live in Rotterdam

Intended: 'I lived in Rotterdam.' (infelicitous in isolation)

(3a), when read in isolation, does not have a past interpretation simply because the context does not provide any past time interval as the topic (reference) time. Once the discourse, for example a previous sentence, provides such a past topic time, the past interpretation becomes readily available.

A similar but slightly different story can be given to the past tense morpheme in Dutch.

According to Kratzer (1998), the tense morpheme may introduce a variable over time intervals and receives its value from the contextually determined assignment function. Suppose that this is the case in Dutch. Then the Dutch example (2b), reproduced below, is infelicitous simply because no past time is available for the contextually determined variable assignment.

(2b) #Ik woonde in Rotterdam

1s live.PST in Rotterdam

'I lived in Rotterdam.' (infelicitous in isolation)

This explains why the Chinese (3b) and the Dutch (2b) are both unacceptable when read in isolation. Though the mechanisms are slightly different in the two languages, the unacceptability of (2b) and (3b) actually has the same source of explanation, though one language has a syntactic tense but the other doesn't.

Finally, consider Sybesma's reported parallelism between telic predicates in Chinese and those in Dutch. According to him, past telic events in both languages must use the perfective constructions overtly, indicating that the endpoint has been realized. However, the parallelism is restricted to certain constructions, in particular the combination of an incremental process verb with an object NP such as *gài yí dòng fangzǐ* 'build a house' or *xiě yì*

běn shū ‘write a book’ . Other types of telic predicates do not always need an overt perfective marker to indicate the endpoint of realization of the event. This can be illustrated by the examples in (8)-(14) taken from Lin (2003a). In (8) the main verb *dǎ-pò* ‘break’ is a resultative compound verb followed by an object NP, but a perfective marker is not required to indicate the completion of the event. (9) and (12) are like (8) in that the verbs are resultative compound verbs. (10) and (11) are more similar in that a locative phrase is placed before an achievement verb. In (13) and (14), the verb is followed by an embedded CP. So we have a variety of telic constructions which do not need an overt perfective marker to indicate telicity. This indicates that the obligatory presence of the perfective marker *le* in (4) is a special requirement of a specific construction rather than a general rule. One cannot conclude from (4) that Chinese must have a null tense to agree with the perfective marker *le*, as Sybesma seems to have suggested.

(8) Tā dǎ-pò yí-ge huā ping 。

he hit-broken one-CL flower vese

‘He broke a flower vese.’

(9) Tā bǎ wǒ gǎn-chū jiàoshì 。

he BA me drive-out classroom

‘He drove me out of the classroom.’

(10) Tā zài Shànghǎi chūshēng 。

he in Shanghai give-birth

'He was born in Shanghai.'

(11) Wǒ zài lù shàng yùjiàn yí-wèi lǎo tàitai ，shuō tā yíshī píbāo 。

I in road on meet one-CL old woman say she lose purse

'I met an old woman in a street, who said she lost her purse.'

(12) Tā dǎ-kāi shūbāo ，ná-chū yì dié chāopiào gěi wǒ kàn 。

he do-open schoolbag take-out one pile paper-money give me see

'He opened the schoolbag and took out a pile of paper money, and showed

it to me.'

(13) Tā gēn wǒ shuō Lǐsì bú qù 。

He to me say Lisi not go

'He told me that Lisi wouldn't go.'

(14) Tā qiángpò wǒ xiū tāde kè 。

he force me take his class

'He forced me to take his class.'

In addition to the above problem, the distribution of *le* is not restricted to past contexts. For example, (15a) has a present interpretation, whereas (15b) has a future interpretation.[xxvii]

(15) a. Zhāngsān yǎng-le yì-tiáo jīnyú 。

Zhangsan keep-ASP one-CL gold-fish

‘Zhangsan keeps a goldfish (as a pet)’.

b. Děng nǐ míng nián bì-le yè ，

Wait you next year graduate-ASP graduate

wǒ mǎi yí-bù chē gěi nǐ 。

I buy one-CL car for you

‘After you have graduated next year, I will buy a car for you.

Such examples cast doubt on the claim that *le* is a marker agreeing with a past tense.

4 Empirical Arguments for the Lack of Tense

In this section, I will present some examples whose temporal interpretations pose problems on a tensed analysis but which do not challenge a tenseless analysis. The tenseless analysis will then be further backed up by four syntactic arguments.

4.1 Semantic Arguments

As noted, a large number of Chinese sentences do not contain any temporal adverbial or aspectual marker but nevertheless have a very clear temporal interpretation and this is true for both dynamic and stative sentences. For example, (16) has a past interpretation and (17) a present interpretation, though both don't have any overt temporal markers.

(16) Zhāngsān dǎpò yí-ge bēizi ◦
Zhangsan break one-Cl glass
'Zhangsan broke a glass.'

(17) Wǒ hěn jǐnzhāng ◦
I very nervous
'I am very nervous.'

For the sake of argumentation, let's tentatively assume with a universalist that the existence of T is part of UG and therefore a T node comes for free in Chinese. Under this assumption, a past tense for (16) and a present tense for (17) can be postulated for free, thus accounting for the temporal interpretations of the two sentences in question. This analysis encounters problems, however. If a past tense can be postulated for (16) for free, the same should apply to (17), which predicts that it has a non-existing past interpretation. Being a stative sentence,

however, it has a past interpretation only when the sentence contains a temporal adverbial or when the discourse provides a past topic time. Note that one cannot say that a past interpretation is not available for it because a temporal adverbial is not in the structure as Sybesma (2007) has claimed. If the past interpretation of (17) were ruled out because of lack of agreement between a null tense and a temporal adverb, (16) would be equally ruled out as an unacceptable sentence for the same reason, which is false.

In fact, the contrast between (16) and (17) reflects a very fundamental distinction often seen in tenseless languages, namely, the perfective vs. imperfective distinction or bounded vs. unbounded distinction. Lin's (2003b, 2006) or Smith and Erbaugh's (2005) framework of temporal interpretation in Chinese is based exactly on this kind of aspectual distinction. Proponents of a tensed analysis of Chinese must postulate an extra and possibly *ad hoc* condition to block (17) from being construed as a past state.[xxviii] Thus there is a cost that a tensed analysis has to pay but its alternative tenseless analysis does not have to.

How does a tenseless analysis such as my framework (Lin 2003b, 2006) account for (17)? It employs aspectual properties of sentences to account for the temporal interpretations.[xxix] Very briefly, this theory says that perfective (bounded) event descriptions obtain a past interpretation by default and imperfective (unbounded) event descriptions obtain a present interpretation by default.[xxx] This result is obtained via the semantics of perfective and imperfective aspect, respectively, given in (18), and the default rule in (19):

(18) a. Perfective aspect = $\lambda P_{<i,t>} \lambda t_{Top} \lambda t_0 \exists t[t \subseteq t_{Top} \wedge P(t) \wedge t_{Top} < t_0]$[xxxi]

b. Imperfective Aspect =: $\lambda P_{<i,t>} \lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge P(t)]$

(19) An expression ϕ of type <*i*,*t*> that serves as a translation of a matrix sentence is true iff [[ϕ]] (s*) = 1, where s* is the speech time.

According to this framework, imperfective aspect requires that the topic time of a sentence is included within the situation time, whereas perfective aspect has the situation time included within the topic time (cf. Klein 1994, Kratzer 1998). On this theory, (17), for example, has a present interpretation, because the speech time, i.e., the default contextually determined topic time, is included within the situation time, as is shown below.

(20) $[[AspP] = \lambda P_{<i,t>} \lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge P(t)](\lambda t.\text{nervous}'(I')(t))$ by functional application

$= \lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge \text{nervous}'(I')(t)]$

$[[IP/CP]] = \lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge \text{nervous}'(I')(t)](s^*)$ by rule (19)

$= \exists t[s^* \subseteq t \wedge \text{nervous}'(I')(t)]$

On the other hand, if this type of sentence contains a temporal adverbial denoting a past interval or a time frame set up by the discourse, the default rule (19) will not apply, because

the temporal adverbial or time frame will fill the value of the topic time variable, hence giving rise to a past interpretation as in *Zuótiān xiàwǔ wǒ hěn jǐnzhāng* 'I was nervous yesterday afternoon' as shown below:[xxxii]

(21) $\lambda t_{Top} \exists t[t_{Top} \subseteq t \wedge \text{nervous}(I')(t)](\text{yesterday-afternoon}')$

$= \exists t[\text{yesterday-afternoon}' \subseteq t \wedge \text{nervous}' (I')(t)]$

Therefore, the above mentioned problem with the tensed analysis does not arise under a tenseless analysis. This analysis demonstrates how the context of a sentence affects the temporal interpretation.

It is worth noting in passing that this tenseless analysis also explains why (22) is infelicitous when the subject refers to a deceased person as Sybesma (2007: 581) pointed out.

(22) Zhāngsān zhù zài zhèēr 。

Zhangsan live at here

'Zhangsan lives here.'

According to Lin's (2006) tenseless analysis, (22) should obtain the same present interpretation as (17) due to the default imperfective aspect and the default interpretation rule

(19). On this analysis, if the subject is a deceased person, the world knowledge will tell us that this is impossible, for a deceased person cannot still live in the real world. Therefore, it is infelicitous to use (22) under a situation where the subject is a deceased person.

A similar point can be made for a sentence like (23).

(23) Zhāngsān yǐjīng líkāi bàngōngshì 。

Zhangsan already leave office

(i) ‘Zhangsan has already left his office.’

(ii) *‘Zhangsan had already left his office.’

The aspectual adverb *yǐjīng* ‘already’ requires that the event denoted by the main predicate takes place before a reference time, which should be the speech time in the case of (23). This interpretation is predicted by the tensed analysis as long as the sentence contains a present tense. However, a tensed analysis also predicts that (23) has a reading according to which the event of leaving occurs before a past reference time, because a past tense, which constrains the topic (reference) time to a past interval, should be available for free just as a present tense. Again, we saw that a tensed analysis predicts an ambiguity of a sentence that does not actually arise.

In contrast, a tenseless analysis as in Lin’s framework does not have the problem of

over-generating unwanted readings, because there is no past tense to constrain the location of the topic time to begin with. It is the utterance context of a sentence that determines the topic time, which can only be the speech time in the case of (23). On this approach, other topic times must be made available through the previous discourse or by a temporal adverbial as in *Sān diǎn de shíhòu Zhāngsān yǐjīng líkāi bàngōngshì* 'Zhangsan had already left his office by 3 o'clock'.

Next consider an embedded relative clause such as (24).

(24) a. Zhāngsān huì qǔ yí-wèi hěn yǒuqián de nǚrén ◦

Zhangsan will marry one-Cl very rich Rel woman

(i) 'Zhangsan will marry a woman who is rich now.'

(ii) 'Zhangsan will marry a woman who will be rich at the time of marriage.'

(iii) *'Zhangsan will marry a woman who was rich before the time of marriage.'

b. Zhāngsān huì mǎi yì běn Lǐsì xiě de shū ◦

Zhangsan will buy one-Cl Lisi write Rel book

(i) 'Zhangsan will buy a book that Lisi wrote before the speech time.'

(ii) 'Zhangsan will buy a book that Lisi wrote before the act of buying (but not necessarily before the speech time).'

(24a) is ambiguous, namely, the time of the woman's being rich can be the same as the time of marriage or the speech time, but it doesn't have a reading according to which the time of the woman's being rich is before the time of marriage. Note that this kind of past reading is allowed when the relative clause is perfective as in (24b). Again, a tensed analysis wrongly predicts that a past tense should be available for free for the relative clause in (24a) just as it is for (24b), unless an *ad hoc* stipulation is employed to block the occurrence of a past tense.[xxxiii] Even if such a stipulation could be proposed, this type of theory owes an explanation of why English is not subject to the same restriction. In English, the sentence *Zhangsan will marry a woman who was rich* is perfectly acceptable.

In contrast, a tenseless analysis does not have the above-mentioned problem. According to Lin's (2006) approach, the ambiguity of (24a) is accounted for as follows. Ogihara (1996) has proposed that the scope of a relativized DP determines the temporal (in)dependence of the relative clause. When a relativized DP is QR-ed to a VP, it is within the scope of the tense of the verb. So the tense of the relative clause is temporally dependent on the tense of the verb. In contrast, when a relativized DP is QR-ed to IP, it is outside the scope of the tense of the verb. Therefore, the tense of the relative clause is temporally independent of the tense of that verb. Although Chinese does not have overt tense morphology, in Lin (2006), I have suggested that something similar applies but the role of tense is replaced by that of aspect, i.e.,

when a QR-ed object DP is adjoined to VP within the scope of the matrix aspect, the matrix event time will be the evaluation time or topic time of the embedded aspect, depending on what aspect is involved. When it is adjoined to IP outside the scope of the matrix aspect, the speech time will be the evaluation time or topic time of the embedded aspect. Therefore, Chinese sentences like (24a) are ambiguous. When the relativized DP is QR-ed to VP, the logical form of (24a) is (25), deriving the reading (ii) for (24a); when it is QR-ed to IP, the logical form is (26), deriving the reading (i) for (24a).[xxxiv]

(25) LF: $[_{CP}[_{IP}$ Zhāngsān $_1$ $[_{Infl'}$ huì $[_{Asp}$ $[_{VP2}$ $[_{DP}$ yi-wei $[_{NP}[_{CP}$ hěn yǒu qián

Zhangsan will one-Cl very have money

de] nǚrén $]]_2$ $[_{VP1}$ e_1 qǔ $e_2]]]]]]$

Rel woman marry

(26) LF: $[_{IP2}$ $[_{DP}$ yi-wei $[_{NP}[_{CP}$ hěn yǒu qián de] nǚ rén $]]_2$ $[_{IP1}$ Zhāngsān$_1$

one-Cl very have money Rel woman Zhangsan

$[_{Infl'}$ huì $[_{Asp}$ $[[_{VP1}$ e_1 qǔ $e_2]]]]]$

will marry

The reader is referred to Lin (2006) for a detailed step by step computation regarding how the above two logical forms obtain their final temporal interpretations. On this approach, there is

simply no way to derive the impossible reading in which the woman's being rich is before the matrix event time as in a tensed analysis.

Summarizing, we have seen that a tensed analysis of Chinese predicts some readings that are consistently missing, whereas a tenseless analysis does not have this sort of problem. Therefore, unless a tensed analysis has provided *non-ad hoc* solutions to the problem, a tenseless analysis of Chinese should be favored.

4.2 Syntactic Arguments

If a syntactic tense does not exist in Chinese, it is predicted that some properties tied to this head should be absent. In this section, I will argue that lack of copula in constructions with a nominal predicate, lack of subject expletives, lack of finite vs. non-finite distinction and lack of case-driven movement are consequences of absence of a syntactic tense node. The evidence given will thus lend further support to a tenseless analysis of Chinese.

4. 2. 1 Sentences with a Bare Nominal Predicate as the Main Predicate

It is well-known that every sentence in English must contain a verb, even if a nominal predicate can be predicated of the subject semantically. For example, as shown by the contrast

between (27a) and (27b), the copular verb *be* must be present in order for the sentence to be grammatical.

(27) a. Today is Wednesday.

b. *Today Wednesday.

A possible reason for the obligatory presence of this semantically vacuous copular *be* is that English is a tensed language and the tense morphology (feature) needs to be checked by a verb.

Very interestingly, Chinese contrasts with English with regard to the presence of a verb. Bare nominal predicates alone are sufficient to constitute the main predicates and such constructions abound, as illustrated below.

(28) a. Jīntiān xīngqítiān ◦

Today Sunday

'Today is Sunday.'

b. Tā dà bízi ◦

he big nose

'He has a big nose.'

c. Wǒ-de yuè gōngzī 320 yuán 。

my monthly salary 320 dollar

‘My monthly salary is 320 dollars.’

d. Wǒmén quán cūn cái liǎng qiān rén 。

We whole village only two thousand people

‘There are only two thousand people in our whole village.’

e. Yuànzi lǐ yí-piàn qīhēi 。

Yard in one-CL darkness

‘It is all darkness in the yard.’

f. Tā yī-bǎ yǎnlèi ，y- bǎ bí tì ， hǎo shāngxīn-de yangzi 。

he one-CL tears one-CL nasal-mucus very sad look

‘He has one handful of tears and one handful of nasal mucus and seems very sad in his look.’

g. Tāmén nǐ yí jù 、 wǒ yí jù 、 shuō ge méi ting 。

they you one word I one word say CL not stop

‘As for them, you said one word, I said one word, talking non-stopply.’

h. Wǒmén liǎng-ge fūqī yìchǎng，……

we two husband-and wife one-time

‘lit. We two are husband and wife one time,…

Note that it cannot be assumed that the constructions in (28) are derived from deletion of the verb *shì* 'be' or *yǒu* 'have' in that *shì* 'be' or *yǒu* 'have' cannot be reconstructed in every case as in (28d)-(28h).

Such constructions raise a very interesting question, namely, why can a nominal predicate alone constitute the main predicate of a sentence in Chinese, as opposed to nominal predicates in English? A straightforward answer is this: a bare nominal predicate in Chinese may constitute the main predicate of a sentence without a verb because the language does not have a syntactic tense and hence there is no tense features to be checked or to find a host.

4.2.2 Lack of Expletive Subjects

Another property typically associated with a tense head is the requirement that all clauses have a subject (Chomsky 1981, 1982). This "subject requirement", namely, the Extended Projection Principle (EPP), forces the presence of the pleonastic subject *there* to appear in the following construction:

(29) There is a fly in your soup.

The EPP, however, does not seem to be universal, because languages such as Chinese need not have an overt subject, as illustrated below.

(30) Yǒu yì-zhī cāngyíng zài nǐ de tāng lǐ ◦

have one-Cl fly in you Poss soup inside

'There is a fly in your soup.'

In fact, apart from impersonal *there*, Chinese also lacks the other two types of expletive subjects recognized in traditional English grammar: the extraposition *it* and the weather *it*. Compare (31) with (32)

(31) a. It is impossible that John has left.

b. It is raining.

(32) a. Xià yǔ le ◦

fall rain ASP

'It is raining now.'

b. Bù kěnéng Zhāngsān yǐjīng zǒu le ◦

not possible Zhangsan already leave ASP

'It's impossible that Zhangsan has left.'

Analyses of expletive constructions abound in the literature and a review of all of them is beyond the scope of the present paper. Roberts and Roussou's (2002) analysis, however, fits our purpose here. They argue that the subject requirement and the V2 requirement are reduced to a single property of tense, as formulated in (33), in connection to the position where T is spelled out.[xxxv,xxxvi]

(33) The head containing T must have a filled specifier.

In English, tense is spelled out in T, so SpecTP must be filled, hence the subject requirement, whereas in V2 languages, tense is spelled out in C due to verb raising and hence SpecCP must be filled, deriving the V2 requirement.

Details aside, if Roberts and Roussou's analysis is correct, a very simple account for why Chinese does not have overt pleonastic subject suggests itself immediately, namely, Chinese lacks syntactic tense and hence no features associated with it are there to force the presence of a pleonastic subject.

4.2.3 Possible Lack of the Finite vs. Nonfinite Distinction

Finiteness of a clause is another typical property that is said to be associated with a tense head. For example, in English, a clause with an inflected verb is a finite clause, whereas a clause with a bare verb preceded by the infinitive marker *to* is a non-finite clause. If Chinese does not have a tense head, it is predicted that there is no finite vs. non-finite distinction.[xxxvii] Indeed, there seems to be no strong evidence for the finite vs. non-finite distinction in Chinese. All the tests used to identify such a distinction as discussed in Huang (1998 [1982]), Li (1985), Tang (1990), Tang (2000), among others, have been shown to be invalid by Hu, Pan and Xu (2001). For example, Huang (1998 [1982]: 248) and Li (1985) have argued that the finite vs. non-finite clauses in Chinese can be differentiated by the distribution of the modal auxiliary *huì* 'will', assumed to be a future tense marker by the latter. According to them, *huì* 'will' can only appear in finite but not in non-finite clauses. Compare the following examples from Li (1990: 22).

(34) *Wǒ quàn/bī tā huì lái ◦
I persuade/force he will come
'I tried to persuade/force him to come.'

(35) Wǒ gàosù tā huǒchē huì kāi ◦
I tell him train will come
'I told him that the train would leave.'

However, as rightly pointed out by Tang (2000) and Hu, Pan and Xu (2001) that the ungrammaticality of (34) is due to semantics rather than to syntax. The former has pointed out that verbs like *quàn* 'persuade' or *bī* ' 'force' lexically require that their embedded verb be a dynamic verb, or alternatively volitionally controllable verbs. Since *huì* 'will' is stative, (34) is unacceptable. I fully agree with this view, because if one wants to persuade or force an agent to do some action, that action must be volitionally controllable by that agent.

The most strong piece of evidence for the finite vs. non-finite distinction reported in the literature is perhaps the distribution of overt NP subjects in embedded clauses. According to Huang (1998/1992), Li (1985, 1990), Tang (1990), Tang (2000), among others, those embedded constructions where a lexical subject may not appear such as (36) are non-finite clauses in Mandarin Chinese, whereas those which allow an embedded subject such as (37) are finite clauses. This is because the subject position of a non-finite clause is an ungoverned position and no Case can be assigned to such a position by a tensed Infl (Chomsky 1981). Therefore, only null subjects, i.e., PRO, can appear in that position.

(36) a. *Lǐ sì shèfǎ tā lái ◦

Lisi try he come

'Lisi tried to come.'

b. *Wǒ bī lǐsì tā lái 。

I force Lisi he come

‘I forced Lisi to come.’

(37) Zhāngsān shuō tā huì lái 。

Zhangsan say he will come

‘Zhangsan said he would come.’

However, Hu, Pan and Xu (2001) and Xu (2003) have counter-argued against this position. They provide examples showing that all the subject positions of the so-called control structures can actually be lexicalized when an appropriate adverbial is inserted between the matrix verb and the embedded subject position, as is illustrated by the following examples adapted from Hu, Pan and Xu (2001).[xxxviii]

(38) a. Wǒ quàn Zhāngsān rúguǒ méi yǒu rén mǎi zhè běn

I persuade Zhangsan if no have people buy this Cl

shū ， **tā** zuìhǎo yě bú yào mǎi 。

book he had-better also not will buy

‘I persuade Zhangsan not to buy this book, if no one bought it.’

b. Nǐ zuìhǎo shèfǎ jīntiān sǎn-le huì yǐhòu ，

you had-better try today end-Asp meeting after

nǐ zìjǐ yǐ-ge rén lái ◦

you self one-Cl man come

'You had better try to come by yourself this afternoon after the meeting is over.'

On the basis of such examples, Hu, Pan and Xu (2001) and Xu (2003) conclude that the constraint on the occurrence of a lexical subject position of the so-called non-finite clause is not a restrictive syntactic constraint but is due to Obviation Principle, which says that an overt pronoun tends to be obviative from the closest prominent NP. If this view is correct, then the distribution of overt or covert NP subjects is not a matter of finiteness. The absence of the finite vs. non-finite distinction may be the direct consequence of the lack of a tense head in Chinese.

There is a further piece of evidence that the choice of a lexical pronoun or an empty NP does not necessarily reflect a structural distinction related to tense and the associated Case assignment, but can be determined by the meaning relation between the dominating verb and the embedded structure.

Dong (2003) has made a very interesting observation about the use of a covert or overt pronoun/anaphor in possessive constructions. In some examples such as those in (39), either

an overt possessor or a covert one is acceptable, but in other examples such as those in (40), only a covert possessor is acceptable.

(39) a. Zhāngsān ài tā-de/zì jǐ -de /∅ qīzǐ 。

Zhangsan love his/self's/∅ wife

'Zhangsan loves his wife.'

b. Zhāngsān xǐ-le tā-de/zì jǐ -de /∅ yīfú 。

Zhangsan wash-Asp his/self's/∅ cloth

'Zhangsan wahsed his cloth.'

(40) a. Mǎlì chángcháng liú *tā-de/*zìjǐ-de/∅ yǎnlèi 。

Mary often flow his/self's/∅ tears

'Mary often let her tears flow.'

b. Māma zài wéi dìdi *tāde/*zìjǐ-de/∅ nǎi 。

mother PROG feed brother her/self's breast-milk

'Mother is feeding her breast-milk to the younger brother.'

According to Dong, the choice of an overt or covert possessor is somehow governed by the relation between the subject, the main verb and the embedded object. While one can love his own wife or washes his own clothes, it's also possible that he loves some other person's wife

or washes other people's clothes. Therefore, when the possessive NP is *tā-de* 'his', the meaning of the sentence is ambiguous. In contrast, for activities like tears flowing or breast-milk feeding, our world knowledge tells us that the possessor of the object NP must be the subject of the verb. The possessive relation in such examples is self-evident. Dong pointed out that when the object NP of a verb is an inalienable part of the subject and the possessive relation is self-evident, the possessor is normally expressed by a null NP. On the basis of this observation, she concludes that the choice of an overt or covert possessor is determined by the meaning relation between the subject, the verb and the object NP.

The upshot of the above discussion is that if Dong's proposal is correct, the choice between an overt or covert NPs in Chinese need not be grammatically determined altogether but can be a semantic-pragmatic issue, because there doesn't seem to be a strong reason to assume that the noun phrase structure of the object NP in (40) differs from that in (39). Arguably, the distinction between (36) and (37) can be likened to that between (39) and (40). Just as the VPs *liú yǎnlèi* 'tears flow' and *wèi nǎi* 'feed breast-milk' require that the embedded possessor of the object NP be anaphoric to the subject, verbs like *shèfā* 'try' require that the subject of its embedded clause be anaphoric to the matrix subject. So a null subject is used in both cases. In contrast, verbs like *shuō* 'say' or *gàosù* 'tell' are like the verb *ài* 'love' or *xǐ* 'wash' in the sense that one can express a thought or statement about other individuals as easily as he can about himself. If this parallel argument is valid, then the possibility of an

overt or covert subject in clauses embedded to verbs like *shèfǎ* 'try' or *gàosù* 'tell' is not necessarily grammatically determined by finiteness or non-finiteness of the embedded clause. In other words, in Chinese there might be no true distinction between finite vs. non-finite clauses and subordination could be indicated by the position of the embedded verb alone. This, I suppose, is a direct consequence of the lack of a syntactic tense head in Chinese.

4.2.4 Possible Lack of Case-related A-movement

Ritter and Wiltschko (forthcoming) have argued that one possible consequence of the lack of the functional category T is the absence of case-motivated A-movement, because case might be a direct consequence of Tense as Pesetsky and Torrego (2001) have argued. Though it is beyond the scope of this reply to discuss case-related movement in Chinese, it is worth discussing two types of constructions that have been claimed to involve case-motivated movement, i.e., the passive and raising constructions.

The most recent analysis of Chinese passives, illustrated in (41) below, is presented in Huang, Li and Li (2009).

(41) Zhāngsān bèi Lǐsì dǎ-le ◦

Zhangsan PASS Lisi hit-Asp

‘Zhangsan was hit by Lisi.’

(42) Zhāngsān bèi dǎ-le ◦

Zhangsan PASS hit-Asp

‘Zhangsan was hit.’

They refer to constructions like (41) “long passives”, which have a passive morpheme *bei* followed by an agent NP, and constructions like (42) “short passives”, which don’t have an agent NP. They argue that there are many difficulties with deriving (41) from the traditional case-motivated NP-movement because of the following properties: (i) the subject position is not a non-thematic position, (ii) subject-oriented adverbs may modify the subject, (iii) *bei* + NP does not form a constituent, (iv) long distance movement is allowed, (v) the construction displays island sensitivity and a resumptive pronoun is possible. According to them, these properties can be best accounted for if “long passives” involve A’-movement (null operator movement) in a “tough movement” style rather than case-motivated A-movement as sketched in (43), where the passive morpheme *bèi* selects a clausal complement.

(43) $[_{IP}$ Zhāngsān … $[_{V'}$ bèi $[_{IP}$ NOP_i $[_{IP}$ Lǐsì dǎ-le t_i]]]]

Prediction movement

As for “short passives”, they argue against an Agent deletion analysis and proposed a

"get-passive"-like analysis for them. On this analysis, *bèi*, a deontic modal or light verb, selects an Experiencer as its subject and a predicative VP as its complement. The patient of the passive verb is itself an empty category, a PRO, which moves to the SPEC of VP and controlled by the base-generated subject. This analysis accounts for, among many other properties, obligatory null object, lack of resumptive pronouns, impossibility of long distance movement and the absence of the particle *suǒ*.

If Huang, Li nd Li's analysis of Chinese passives is correct, it implies that unlike English passives, Chinese passives do not involve case-motivated movement. Even if the PRO movement in "short passives" is claimed to be an A-movement, it is not case-motivated, because PRO does not need Case and it cannot be governed.

As for raising constructions, consider (44) and (45).

(44) a. Hǎoxiàng Zhāngsān bú qù de-yangzi 。

seem Zhangsan not go as if

'It looks as if Zhangsan doesn't want to go./It seems that Zhangsan doesn't want to go.'

b. Zhāngsān hǎoxiàng bú qù de-yangzi 。

Zhangsan seem not go as if

'It looks as if Zhangsan doesn't want to go./It seems that Zhangsan doesn't

want to go.'

(45) a. Kěnéng Zhāngsān bú qù

likely Zhangsan not go

'It's likely that Zhangsan won't go.'

b. Zhāngsān kěnéng bú qù

Zhangsan likely not go

'Zhangsan is likely not to go.'

It's difficult to argue that the seem-type constructions such as (44) involve NP-raising, because the word *hǎoxiàng* 'seem' is more like an adverb than a verb in that it cannot be negated nor can it form an A-not-A question, a typical property associated with verbs in Chinese. The word order variation in (44) can be easily accounted for as follows: a sentence-level adverb is free to occur before or after the subject of the sentence.

In contrast, *kěnéng* in (45) is indeed a predicate, because it can be negated and form an A-not-A question. Even if this is the case, it is not clear that (45b) is derived from (45a) by case-motivated NP movement, because (45a) is as fully-gramamtical as (45b). A case-motivated movement analysis of (45b) would predict that (45a) involves an embedded non-finite clause and the whole construction cannot be used independently without the embedded subject being moved. Since this is not the case, I conclude that the contrast

between (45a) and (45b) does not provide compelling evidence for case-motivated movement.

To sum up, the most typical evidence for case-motivated movement as we have seen in English does not have a straightforward counterpart in Chinese. From here, of course, I dare not conclude that Chinese completely lacks case-motivated movement, because the discussion is limited. But they imply that Chinese might not have the kind of familiar case-motivated movement associated with a tense feature. I take this to be suggestive evidence that Chinese lacks a T node.

4.3 Conclusion

Before moving to the next section, let me note that there is a very good chance for a tenseless analysis to unify the seemingly unrelated syntactic facts discussed in this section, namely, they are all correlated with the absence of a T node in Chinese. In contrast, under a tensed analysis of Chinese, these syntactic facts would look more like unrelated coincidences. This consideration thus favors a tenseless analysis of Chinese over a tensed one.

The above conclusion, however, raises a very big issue about the Chinese syntax. Based on data in Blackfoot, Ritter and Wiltschko (forthcoming) have argued that lack of a functional tense head correlates with lack of structural case and case-motivated movement. A similar conclusion is arrived at for Halkomelem in Wiltschko (2003). Given that Chinese displays

similar properties, an interesting question arises. Is Chinese like Blackfoot and Halkomelem with respect to the absence of structural case due to absence of tense? If the answer is positive, could Chinese be analyzed as caseless, too? I don't think that I will be able to resolve this big syntactic issue in this article. But a speculative answer can be given. As discussed in Lin (2006), the role of tense in a tensed language such as English seems to be replaced by the role of aspect in Chinese. Could it be the case that aspect, instead of tense, is related to Case, if Case exists in Chinese? I will leave this question for future research.

5 A Brief Note on St'át'imcets

In connection with Chinese, it is worth discussing St'át'imcets (Lillooet Salish), a language which has received the most detailed defense by Matthewson (2006) for a tensed analysis of a superficially tenseless language in the literature. It is interesting to see whether her proposed theory has reached her goal.

According to Matthewson, superficially tenseless sentences in St'át'imcets can be interpreted as either present or past, as illustrated by the examples in (46).

(46) a. táyt-kan

hungry-1SG.SUBJ

‘I was hungry/ I am hungry.’

b. k’ác-an’-lhkan

dry-DIR-1SG.SUBJ

‘I dried it/ I am drying it.’

c. sáy’sez’-lhkan

play-1SG.SUBJ

‘I played / I am playing.’ (Matthewson 2006: 676)

Matthewson pointed out that the default temporal interpretations of superficially tenseless sentences in St’át’imcets are greatly influenced by the aspectual class of the predicate. Stative predicates strongly prefer present tense interpretations in out of the blue contexts, while accomplishments by default have past tense interpretations. Achievements also strongly prefer past interpretations. In contrast, activities can be freely intepreted either way. However, beyond the default interpretations all superficially tenseless predicates may have either a present or past interpretation regardless of their aspectual class.

Matthewson (2006) proposed a tensed analysis of St’át’imcets. According to her, all superficially tenseless sentences in St’át’imcets contain a phonologically null tense morpheme, TENSE, which introduces a variable over the reference time and whose value is contextually determined by the assignment function. This tense morpheme introduces a presupposition

restricting the reference time to a non-future interval. The denotation of this tense morpheme is given in (47) and the temporal meaning of (48) is calculated in (49).[xxxix]

(47) $[[\text{TENSE}]]^{g,c}$ is only defined if no part of g(i) is after tc. If defined,

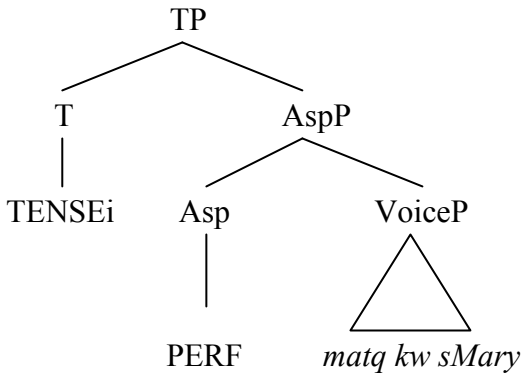
$[[\text{TENSE}]]^{g,c} = g(i)$.

(48) matq [kw s-Mary]

walk [DET NOM-Mary]

'Mary walked / Mary is walking.'

(49) a.



b. $[[(49a)\ ]]^{g,c} = \lambda w \exists e[\text{walk}(e)(w) \ \& \ \text{agent}(\text{Mary})(e)(w) \ \& \ \tau(e) \subseteq g(i)]$

(where no part of g(i) follows t_c).

c. There is an event e of Mary walking, whose running time τ(e) is included in the contextually salient non-future time g(i).

According to Matthewson (2006: 681), (49c) predicts that (48) can be interpreted in the past or in the present, depending upon whether the discourse has a past reference time or present

reference time. On this analysis, the only difference between English and St'át'imcets is that the TENSE morpheme in the latter is slightly less restrictive than English PAST.

The greatest difficulty with Matthewson′s above analysis is the incompatibility between the meaning of perfective aspect and the present interpretation. Following Bar-El′s (2005) study of Skwxwú7mesh, a Central (Coast) Salish, Matthewson has assumed that absence of an overt imperfective marker in St'át'imcets indicates perfective aspect, which is an inclusion relation of the event time within the reference time. However, normally, the inclusion relation under discussion is understood in such a way that the whole maximal event including the initial and final endpoints is included within the reference time (cf. Klein 1994, Kratzer 1998). This means that any entire event denoted by a superficially tenseless sentence in St'át'imcets must fall within an interval whose final endpoint is no later than the speech time. In other words, St'át'imcets shouldn't allow a superficially tenseless sentence to be interpreted in such a way that the running time of the event extends to a point after the speech time. This, however, is in contradiction to the present interpretation of the sentences in (46). This problem implies either that the null tense analysis as proposed by Matthewson is still inadequate or her assumption for perfective aspect needs to be revised. If the above remark is correct, then even the most detailed tensed analysis of a (superficially) tenseless language in the literature hasn't been proved to be empirically adequate.

6. Concluding Remarks

This article has shown that Sybesma's arguments for the existence of a syntactic T node in Chinese still leave rooms for reconsideration. His evidence does not force us to conclude that Chinese must have a T node. To the contrary, it was shown that a tensed analysis of Chinese faces problems of over-generating unwanted readings. On the other hand, a tenseless alternative was presented to account for the same range of data without encountering the same problems. This tenseless analysis is further supported by syntactic evidence such as the ability for a nominal predicate to serve as the main predicate, the impossibility of an expletive subject, the lack of a clear distinction between finite and non-finite clauses and the possible absence of case-related movement.

In addition to the above conclusions, it is worth emphasizing that functional categories may vary from language to language and it is not necessarily true that all languages share the same set of functional categories. It is under this assumption that a tenseless analysis of Chinese should be preferred to a tensed analysis not only because of syntactic economy but also because of Occam's Razor, as my earlier works (Lin 2003b, 2006) have suggested. Of course, by this short reply, I dare not hope to have settled the debate between a tensed and a tenseless analysis of Chinese. However, I believe that the discussion and the empirical facts reported here have made a significant contribution to this debate.

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[i] Reichenbach (1947) originally used the term 'reference time' rather than topic time. According to Klein (1994), topic time is a time which the discourse is about. In some theories, reference time or topic time is replaced by perspective time in that the reference time or topic time can be the event time of the matrix clause to which a tense is embedded as in Japanese (Ogihara 1996).

[ii] Current theoretical proposals differ with respect to whether tense meanings are asserted (e.g. Comrie 1985; Chung & Timberlake 1985; Dowty 1982; Hinrichs 1986) or whether they

involve a presupposition about the reference time (e.g. Kratzer 1998)

[iii] Not all languages utilize the three way tense distinction. English and German, for instance, have been said to display a past/non-past distinction only (Comrie 1985, p.10).

[iv] For some people, aspect is an eventuality description modifier, mapping eventuality descriptions to eventuality descriptions (e.g. Mourelatos 1981; Moens & Steedman 1988).

[v] The abbreviations used in this chapter are as follows: ASP = aspectual marker; BA = marker for preposed object NP; CL = classifer; DIR = directive transitivizer; ERG = ergative; FCT = factual mood; IND = indicative mood; IV = intransitive verb; LOC = locative; PAR = particle; PASS = passive marker; PROG = progressive marker; REL = relative clause marker; SG = singular; SUBJ = indicative subject.

[vi] This is a much simplified formulation given by Roberts and Roussou in the beginning of their paper. More accurately, they have employed the notion of tense dependence to account for the facts.

[vii] A caveat about this remark is that some tensed languages, or more precisely the pro-drop languages, do allow a pronoun argument to be dropped.

[viii] Huang, Li and Li (2009) also discussed what they call 'short passives' such as (i) below.

(i) Zhāngsān bèi dǎ-le ◦
Zhangsan PASS hit-Asp
'Zhangsan was hit .'

They argue that such constructions are more like 'get-passives' which involve a movement of a PRO within VP. This PRO is controlled by the base-generated subject NP. Since PRO cannot be governed and does not need case, short passives such as (i) do not support case-motivated movement, either.

[ix] The condition '$t_{Top} < t_0$' in (44a) is not present in Lin's (2003a) work, which relies more on pragmatic reasoning to derive the same effect.

[x] When a sentence is embedded to another verb, the topic time or evaluation time can be shifted to the event time of the matrix verb.

[xi] Normally, it is stage one of a process that is involved.

[xii] Bittner (2008) assumes with Webber (1988) that event verbs update the topic time to the result time of the verb rather than the time immediately after the event as in Partee (1984).

[xiii] Shaer's (2003) examples discussed below are all credited to Fortescue (1980, 1984).

[xiv] In addition to *kelh*, the aspectual auxiliary *cuz*' 'be going to' and a small number of motion verbs may also be used to describe future eventualities.

[xv] According to Abusch (1985), the English surface forms *will* and *would* each contain *WOLL* plus present and past tense, respectively.

[xvi] Matthewson has assumed that the tense morpheme introduces a variable over time intervals, i.e., the symbole *i* in (60). The value of the variable *i* is determined by a contextually determined assignment function *g*. The application of *g* to *i* is a reference interval denoted by the null tense morpheme, which is restricted to a non-future interval.

[xvii] For a potential problem with the prediction, see Lin (2010) for discussion.

[xviii] This remark should apply to both a tensed and a tenseless analysis.

[xix] Unlike Matthewson's assumption, we do not assume an event variable in the object language. Instead, we assume that predicates have a time argument. The difference is not crucial, however.

[xx] Matthewson (2006, note 6) suggested that achievements such as *I reach the top* in

St'át'imcets might be uttered at the moment of culmination. However, she is not sure that this represents the true present tense reading. For such sentences, the culmination point might only abut the moment of speech, giving rise to the illusion that it has a present reading. If this is correct, no achievements have a present interpretation.

[xxi] I would like to thank C. T. James Huang, Thomas Lee, Chen-Sheng Liu, Hao-Yi Tai, Ting-Chi Wei, and two anonymous LI reviewers for very helpful discussions, suggestions, comments and corrections. Thanks also to the FOSS 6 and IACL 17 audience for their questions and comments. The research for this paper would not have been possible without the support of a NSC Grant # 97-2410-H-009-039-MY3 and a Fulbright senior research grant for the 2009-2010 visiting scholar program. I am solely responsible for any remaining errors.

[xxii] See Lin (2003b, 2006) and Smith and Erbaugh (2005) for example.

[xxiii] However, in other contexts such as subordinate clauses, the same sentence is fine.

[xxiv] Gerstner and Krifka (1993) and Krifka (1995) have suggested that bare nouns should be able to name kinds in any language that allows bare nouns in the first place.

[xxv] There are many languages where singular reference to kinds is possible such as Hebrew, Hindi and Russian (Doron 2003, Dayal 1999).

[xxvi] Another approach is an ambiguity-approach according to which bare (plural) arguments are ambiguous between a kind and a weak indefinite reading as in Wilkinson (1991) and Diesing (1992).

[xxvii] See Lin (2003b) for more discussions of such sentences.

[xxviii] Note that it is impossible to claim that a past tense is incompatible with a stative situation, because past states are possible when the sentence contains a temporal adverbial denoting a past interval.

[xxix] Like Lin (2003b, 2006), Smith and Erbaugh's (2005) theory of temporal interpretation in Chinese and Bittner's (2008) analysis of Kalallisut are also based upon the aspectual properties of a sentence. Their accounts are very similar, though the details differ.

[xxx] What type of aspect is involved is predicted by Bohnemeyer and Swift's (2004) notion of

Default Aspect.

[xxxi] The condition '$t_{Top} < t_0$' is not present in Lin's (2003b) work, which relies more on pragmatic reasoning to derive the same effect.

[xxxii] A previous discourse may also license a past interpretation for this type of sentence. For example, speaker A's utterance below licenses the past interpretation of speaker B's reply.

(i) Speaker A: Nǐ qù nián zhù zài nǎlǐ ？
you last year live in where
'Where did you live last year?'
Speaker B: Wǒ zhù zài lùtèdān 。
I live in Amsterdam
'I lived in Amsterdam.'

In such cases, the temporal adverbial in speaker's A utterance fills the value of the topic time variable of Speaker's B utterance, perhaps through discourse binding.

[xxxiii] According to Sybesma (2007: 582), the co-occurrence restriction between a temporal adverb and a past tense marker is relaxed in subordinate clauses in Dutch. Therefore, one cannot stipulate that embedded relatives must have a temporal adverb in order to be interpreted as being in the past.

[xxxiv] I assume that modal auxiliaries are under Infl, which does not contain any tense feature. So the label 'Infl' does not have any sense associated with verbal inflection. It is used here only for the sake of convenience and familiarity.

[xxxv] The V2 requirement dictates that a declarative C which attracts the inflected verb in a V2 language must have a filled specifier

[xxxvi] This is a much simplified formulation given by Roberts and Roussou in the beginning of their paper. More accurately, they have employed the notion of Tense dependence to account for the facts. The reader is referred to their paper for further discussion.

[xxxvii] For a review of the notion of finiteness, see Nikolaeva (2007).

[xxxviii] Hu, Pan and Xu (2001) also pointed out that the lexical subject position in constructions like (38) can all be replaced by the anaphor *zìjǐ* 'self'. Also see Xu (2003) for the point that *zìjǐ* in such constructions can be a subject rather than an intensifying adverbial.

[xxxix] According to Matthewson (2006, note 4 and page 683), imperfective aspect is overtly marked in St'át'imcets. Absence of the overt imperfective marker indicates the perfective aspect. That's why the aspect in (49) is perfective.

國科會補助專題研究計畫項下出席國際學術會議心得報告

日期：100 年 7 月 10 日

計畫編號	NSC 97－2410－H－009－039－MY3		
計畫名稱	形式語意學及漢語句子的語意分析		
出國人員姓名	林若望	服務機構及職稱	國立交通大學外文系
會議時間	100 年 6 月 11 日至 100 年 6 月 13 日	會議地點	中國天津南開大學
會議名稱	（中文）第十九屆國際中國語言學學會年會 （英文）The 19th Annual Conference of the IACL (IACL-19)		
發表論文題目	（中文）時相(事件)結構與時量詞組的句法與語意 （英文）Event Structure and the Syntax and Semantics of Durative and Completive phrases		

一、參加會議經過

本人 2011 年六月十一~十三日至中國天津南開大學參加第 19 屆國際中國語言學會議，於六月十日下午抵達天津，入住會議指定飯店，並辦理報到手續。六

月十一日起開始開會。此次會議由南開大學的石峰教授主辦，參加人數空前之多，約有 200 多人，會議皆以平行議程同時進行，此次會議甚至創下多達 8、9 個平行議程同時進行，本人以參加句法及語意組為主，攜回了許多這方面的講義。除了會議參加人數多是一個特點外，此次特邀演獎共有四人如下:

黃正德（ James C.-T. Huang | 美國 哈佛大學）

陸儉明（ Jianming Lu | 中國 北京大學）

貝羅貝（Alain Peyraube | 法國 法國高等社會科學院）

沈家煊（Jiaxuan Shen | 中國 中國社會科學院）

演講主題領域含括形式與功能分析，傳統與歷史語言學，算是相當平衡。除了主題演講外，主辦單位也特邀了以下各具特色的講者，替會議增添了許多可聽性。

Wynn Chao（英國 | 倫敦大學）

崔圭缽（Kyu-bal CHOI | 韓國 高麗大學）

戴浩一（James H.-Y. Tai | 中國臺灣 中正大學）

戴慶廈（Qingxia Dai 中國 | 中央民族大學）

羅端（Redouane Djamouri | 法國 法國高等社會科學院）

蔣紹愚（ Shaoyu Jiang | 中國 北京大學）

李亞非（Yafei Li | 美國 威斯康辛大學-麥迪森校區）

李豔惠（Audrey Y-H Li | 美國 南加州大學）

李宇明（Yuming Li | 中國 教育部語言文字資訊管理司）

劉鳳樨（Feng-hsi Liu | 美國 亞利桑那大學）

麥肯（Marlys Macken | 美國 威斯康辛大學-麥迪森校區）

馬西尼（Federico Masini | 義大利 羅馬大學）

潘悟雲（Wuyun Pan | 中國 上海師範大學）

孫宏開（Hongkai Sun | 中國 中國社會科學院）

文森特（Vincent J. van Heuven | 荷蘭 萊頓大學）

以上的特邀演講，本人親自聆聽了許多場，並提出意見討論，充分達到學術交流之目的，但有些因為平行議程無法聆聽，殊為可惜。

二、與會心得

此次參加會議的人數很多，但因為在大陸開會，與會學者雖然來自全球各地，但還是以大陸學者及研究生居多。至於本人的演講，講題是“時相(事件)結構與時量詞組的句法與語意”，被安排在第一天下午，約有 30 人左右出席聆聽，演講完後有多人提出建言指教，對於演講內容的修改頗有幫助。與會者的有些問題雖然也在研究過程中思考過，但因為分析不易，未能具體深談，不過與會者的提問還是提醒我研究中不可迴避的問題，終究是要面對。此次演講，特別值得一提的是法國學者 Waltraud Paul，利用了會後時間與本人以及交通大學劉辰生教授進行了約 2 個小時的討論及辯論，讓自己更清晰研究中需要考慮的一些問題，這算是此次參加會議的最大收穫。

總而言之，此次天津之行，不管是在會議裡的演講，還是私底下和其他學者的討論，本人都學到了很多東西，對於研究內容的修改有很大的幫助。

三、考察參觀活動(無是項活動者略)

無

四、建議

此次會議，為了讓比較多的人可以參與會議，因此接受了 200 多篇論文，參加的人數雖然多了，但卻都是以平行議程來進行，因此許多場次顯得冷清，也有許多演講，想聆聽卻無法前往，而且因為參加的人多，演講以及討論時間的時間都被壓縮，無法完全地交流，因此不建議以此方式舉辦國際會議。

五、攜回資料名稱及內容

此次會議攜回了會議手冊一冊，會議論文摘要一冊以及大會贈送語言學圖書一本，還有就是聆聽演講得講議。至於此次會議的議程以及本人的演講稿內容，一並附於後，以供參考。

六、其他

無

IACL-19 国际中国语言学学会第十九届年会

The 19th Annual Conference of the International Association of Chinese Linguistics

Notification of Abstract Acceptance and Invitation Letter

论文提要接受通知暨会议邀请函

March 10th , Tianjin, China

Dear Colleague:
各位尊敬的同仁：

We are pleased to inform you that the abstract of your paper has been accepted for presentation at the 19th Annual Conference of the International Association of Chinese Linguistics (IACL-19), which will be held at Nankai University in Tianjin, China, from Saturday, June 11 to Monday, June 13, 2011.

我们非常高兴地通知您：您的下列论文提要经专家匿名审稿已被接受，谨此邀请您于今年 6 月 11～13 日在中国天津南开大学举行的国际中国语言学学会第十九届年会（IACL-19）宣读。

Name /作者姓名：林若望（Jo-wang Lin）
Affiliation/所属机构：國立交通大學
Paper title /论文题目：時相(事件)結構與時量詞組的句法與語意

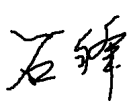
Each presentation will be allowed 20 minutes with additional 5-10 minutes for discussion. Please fill out the attached Invitation Acceptance Form & Return-Slip (online registration will be available at http://202.113.16.32/iacl-19/MeetingRegister.asp) and revise your abstract by following the instructions given, then email them back to: IACL19papers@gmail.com or by April 10th 2011. If you late change your mind after having accepted this invitation, please inform us at your earliest convenience so that the program can be adjusted accordingly in time. Other information will be placed on our homepage (http://202.113.16.32/iacl-19/index.asp), please check it regularly for updates.

每位发言者将有 20 分钟的报告时间和 5-10 分钟的讨论时间。请您将附件中的接受表暨回执单填好后(也可以进行在线注册：http://202.113.16.32/iacl-19/MeetingRegister.asp) 连同修改后的论文提要于 2011 年 4 月 10 日前发送至: IACL19papers@gmail.com。如果您在接受此邀请后计划有所变更，也请及时告知我们，便于工作人员相应调整会议议程。其他重要的会务信息将陆续在大会网站 (http://202.113.16.32/iacl-19/index.asp)公布，请保持关注。

Should you have any questions regarding this, please contact us at: IACL19questions@gmail.com. We are looking forward to hosting you here at Nankai University in June!

如果您有任何疑问，请及时致函垂询组委会：IACL19questions@gmail.com，组委会全体工作人员翘首期待您于今年 6 月光临南开!

Sincerely, 即颂时琪！



Chair, IACL-19 Organizing Committee
Professor, College of Chinese languages and Literature/School of Literature, Nankai University

19th Annual Conference of the International Association of Chinese Linguistics
(June 11-13, 2011)

Conference Program (preliminary)

Saturday June, 11, 2011

7:30-8:10 On-Site Registration
8:10-9:00 Welcome Room: 南开大学主楼小礼堂

Session 1（9：00—9：50）

Session 1	**Keynote Speech**	**Chair: 张洪明 Room: 南开大学主楼小礼堂**
9:00-9:50	黄正德（C.-T. James Huang）	On *bei xiao-kang* 被小康 and the putative birth of a new syntactic construction

Break：9：50-10：10

Session 2（10：10-12：15）

Session 2 A	**Chair: 石定栩 Room: 二主楼 A401**	
10:10-10:30	黄瓒辉	Semantic Interpretation of Determiner Quantifiers
10:30-10:50	Grant Xiaoguang Li	Distributivity without Distributive Markers
10:50-11:10	靳玮	“充分、充足”辨析——事件修饰与数量修饰
11:10-11:30	周守晋	“都”的共现方式及其作用对象的语义属性
11:30-11:50	Discussion	

Session 2 B	**Chair: 李艳惠**（Y.-H.Audrey Li） **Room: 二主楼 A402**	
10:10-10:30	祖昕 顾阳	Feature Checking at the Right Periphery: A Case in Jingpo
10:30-10:50	Waltraud PAUL（包华莉）	Bridge verbs and the left periphery in Mandarin Chinese
10:50-11:10	Candice Chi-Hang Cheung	The cartography of the low IP area in Mandarin
11:10-11:30	蔡维天	谈「来」的施事、使动和蒙受用法
11:30-11:50	菊島 和紀	Affectedness in Double Unaccusative and Adversity Causative
11:50-12:15	Discussion	

Session 2 C	**Chair: 罗端（Redouane Djamouri） Room: 二主楼 A403**	
10:10-10:30	杨晓安	副词“都”多指歧义消解的韵律手段
10:30-10:50	阎玲	“会+名词”句式的韵律构建
10:50-11:10	周韧	汉语语法中双音节和四音节的对立
11:10-11:30	王丽娟	论双音节韵律模块的形态功能
11:30-11:50	邱金萍	韵律换算对汉语表达的影响及韵律与语义的交互作用
11:50-12:15	Discussion	

Session 2 D	**Chair: 刘丹青**	**Room: 二主楼 A404**
10:10-10:30	Invited Speaker 李亚非	论汉英词类的异同
10:30-10:50	任国俊	元曲中 ABCD 式状态形容词成因探析
10:50-11:10	郭锐	形容词的类型学和汉语形容词的语法地位
11:10-11:30	Chen-Sheng Luther Liu（劉辰生）	Reduplication of Chinese Adjectives: Rule-governed or Not?
11:30-11:50	Discussion	

Session 2 E	**Chair: 施向东**	**Room: 二主楼 A406**
10:10-10:30	王双成	藏语 sr-声母的演化特征
10:30-10:50	徐世梁	从藏语音变看社会状态对语音变化的影响
10:50-11:10	丰琨	藏文“舌根音+流音”演变情况调查
11:10-11:30	邵明园	古藏文的小称
11:30-11:50	Discussion	

Session 2 F	**Chair: 石锋**	**Room: 二主楼 A407**
10:10-10:30	顾介鑫　杨亦鸣	汉语离合词的神经电生理学研究
10:30-10:50	夏全胜	汉语双音节名词、动词和动名兼类词语义加工的 ERP 研究
10:50-11:10	封世文	动补结构后缀“了”的句法属性——基于脑功能成像（fMRI）的实验研究
11:10-11:30	Discussion	

Session 2 G	**Chair: 宋晨清**	**Room: 二主楼 A409**
10:10-10:30	刘艺	香港粤语单元音的性别特征分析
10:30-10:50	梁磊 孟小淋	重庆方言单字调的性别、年龄差异分析
10:50-11:10	亓海峰	辽宁东港方言“u”介音的变异
11:10-11:30	帅兰 龚涛	Neural Processing of Mandarin Tones
11:30-11:50	朱敏 胡伟	长沙普通话音系初探
11:50-12:15	Discussion	

Session 2 H	**Chair: 王宁**	**Room: 二主楼 A410**
10:10-10:30	Invited Speaker 蒋绍愚	现代汉语常用词考源
10:30-10:50	邵文利 杜丽荣	《初学记》引《说文》考
10:50-11:10	柳建钰	《类篇》生僻联绵词考辨十例
11:10-11:30	刘艳红	“面上”“脚下”考议
11:30-11:50	Discussion	

Session 2 I	**Chair: 杨小璐**	**Room: 二主楼 A411**
10:10-10:30	胡建华、李汝亚、李宝伦	Scope Acquisition at the Interfaces
10:30-10:50	李汝亚、石定栩 、胡建华	汉语省略结构的习得研究
10:50-11:10	吴雪钰、林华勇	语义地图模型与“到”的习得研究

11:10-11:30	侯建东	The Production Preference for Chinese Object-extracted Relative Clauses by Chinese Learners
11:30-11:50	Discussion	

Session 2 J	**Chair: 王惠**	**Room: 二主楼 A412**
10:10-10:30	Meisterernst, Barbara	Expressions of Deontic Modality in Pre-Tang Chinese
10:30-10:50	王瑞晶	“相”字功能演变
10:50-11:10	朴乡兰	汉语“教/叫”字句从使役到被动的演变
11:10-11:30	柳东春、白恩姬、朴正九	从甲骨文看汉语量词的产生及其机制
11:30-11:50	张薇	海盐话中泛指量词、远指代词和名词化标记之间的关系
11:50-12:15	Discussion	

Session 2 K	**Chair: 董秀芳**	**Room: 二主楼 A413**
10:10-10:30	宁春岩	Is Lexicon Universal or Language-Specific?
10:30-10:50	Ruixi Ressy Ai	Impossible Null Objects
10:50-11:10	田启林	伪双宾句的动态生成
11:10-11:30	Xin Zhao（赵欣）、Hye In Shin（申惠仁）	Obligatory object-to-subject raising in the hao-V constructions in Mandarin
11:30-11:50	Discussion	

Lunch（12：15-13：20）

Session 3（13:20-15:00）

Session 3 A	**YSA Final Competition**	**Chair: 李行德（Thomas Hun-tak Li） Room: 二主楼 A401**
13:20-13:55	史文磊	汉语运动事件词化类型之演化
13:55-14:30	帅 兰	Hemispheric lateralization is modulated by tone features: An ERP study on Cantonese
14:30-15:05	杨若晓	Lateralization effect in reading single Chinese characters
15:05-15:40	张 文	近代汉语“给”的语法化研究

Session 3 B	**Chair: 杨琳**	**Room: 二主楼 A402**
13:20-13:40	陈练军	古汉语单音词的语素化演变
13:40-14:00	梁吉平	从文物—文献角度检视坐姿及坐义转变
14:00-14:20	刘秀梅	墓志异名考释
14:20-14:40	Discussion	

Session 3 C	**Chair: 王洪君**	**Room: 二主楼 A403**
13:20-13:40	Invited Speaker 游汝杰	方言趋同与混合型方言的形成
13:40-14:00	何纯惠	談客、贛方言的邊音塞化與濁音清化

14:00-14:20	沈瑞清	也談閩西北方言來母讀擦音現象
14:20-14:40	李佳	赣语韵母的“弇侈同韵”及其音系学解释
14:40-15:00	Discussion	

Session 3 D	**Chair: 远藤雅裕**	**Room: 二主楼 A404**
13:20-13:40	Invited Speaker Choi Kyu-Bal（崔圭钵）	韩汉时体标记的语法化条件
13:40-14:00	郑伟	早期和现代吴语中“个”的体貌功能
14:00-14:20	张巍	关中方言“下”的完成体与持续体用法
14:20-14:40	陈曼君	明清以来闽南方言助动词“卜”的语义演变
14:40-15:00	Discussion	

Session 3 E	**Chair: 郭锐**	**Room: 二主楼 A406**
13:20-13:40	罗耀华	北方方言话题转移标记“拉倒”的形成及其历时演变
13:40-14:00	李秉震	“关于”“对于”的语义功能
14:00-14:20	王蕾	基于语篇的“把”字句话题研究
14:20-14:40	郭红	用于假设句末的语气词“吧”和“呢”
14:40-15:00	Discussion	

Session 3 F	**Chair: 张维佳**	**Room: 二主楼 A407**
13:20-13:40	张盛开	平江方言的尊称词尾“佬”
13:40-14:00	盛益民	论指示词“许”的来源及语义扩展
14:00-14:20	加纳巧	照应代词“他”的起源及其发展
14:20-14:40	邱磊	从类型看黄冈方言使役助词“端到”的来源
14:40-15:00	Discussion	

Session 3 G	**Chair: 周荐**	**Room: 二主楼 A409**
13:20-13:40	王惠	基于口语语料库的基本词汇分析
13:40-14:00	王珊	词汇系统建立的新实践——以“经济贸易”类为例
14:00-14:20	Michael Opper, San Duanmu	现代汉语语料中的日语借词统计
14:20-14:40	焦立为	从语用频率的角度来分析汉语成语的理解和输出
14:40-15:00	Discussion	

Session 3 H	**Chair: 孙锦涛**	**Room: 二主楼 A410**
13:20-13:40	高增霞	“声音”义素对汉语词汇系统的影响
13:40-14:00	章明德	词义对词素类型的决定性影响力---以「乖」为例
14:00-14:20	邱湘云	客家話人體動詞的義素分析－以手擊、眼看、口吃類為例
14:20-14:40	朴爱华	韩国独有汉字词构词研究初探——以汉字语素“假、间”为例
14:40-15:00	Discussion	
Session 3 I	**Chair: 朴正九**	**Room: 二主楼 A411**

13:20-13:40	林若望	时相(事件)结构与时量词组的句法与语意
13:40-14:00	徐晶凝	过去已然事件句对“了 1”“了 2”的选择
14:00-14:20	Shu-ing Shyu（徐淑瑛）	Aspect Selection and Sentence Final Particle DE
14:20-14:40	Han Jing	Revisit Aspectual Categories in Mandarin Chinese----Accomplishment and Achievement
14:40-15:00	Discussion	

Session 3 J	**Chair: 蒋绍愚**	**Room: 二主楼 A412**
13:20-13:40	Jung-Im Chang	于 vs. 於: their origin, grammaticalization,and the replacement process of the former by the latter
13:40-14:00	邵琛欣	《韩非子》“同”字研究
14:00-14:20	潘秋平 吴南财	“动 $_1$+直接宾语+与+间接宾语”的与格结构的来源
14:20-14:40	苏颖	《国语》“以 NV”、“V 以 N”、“N 状 V”的比较分析
14:40-15:00	Discussion	

Session 3 K	**Chair: 冯胜利**	**Room: 二主楼 A413**
13:20-13:40	Foong Ha YAP Winnie Oi-Wan CHOR Jiao WANG	On the grammaticalization of ‘fear’ verbs in Chinese
13:40-14:00	朱俊玄	“们”的虚化
14:00-14:20	Oi-Wan CHOR	‘Going back without physically returning’: On the grammaticalization,subjectification, and intersubjectification of 返 faan1 ‘return’ in Cantonese
14:20-14:40	沈君蓉	On Multiple Functions and Synchronic Grammaticalization of TSM Manner Adverb An2-ni: A Corpus-based Approach
14:40-15:00	Discussion	

Session 3 L	**Chair: 施春宏**	**Room: 二主楼 A414**
13:20-13:40	李贞爱	关于能愿动词肯定与否定的不对称现象－试析“不可以”“不能”的语义功能
13:40-14:00	平山邦彦	试谈汉语“领属‘比’字句”
14:00-14:20	余光武	情态动词“能”、“会”语义、语用的比较研究
14:20-14:40	安本真弓	关于可能表达中“能”的句法功能
14:40-15:00	Discussion	

Session 3 M	**Chair: 陆俭明**	**Room: 二主楼 A314**
13:20-13:40	石定栩	名词性短语内部修饰语的句法地位
13:40-14:00	Yang Jing	The Nominal Nature of Disyllabic Activity Words in Mandarin
14:00-14:20	邢欣、郭安	轻动词框架下的汉语名词转类研究
14:20-14:40	王红旗	体词性成分的指称等级
14:40-15:00	Discussion	

15:00-15:20 Tea Break (20 minutes)

Session 4（15:20-17:25）

Session 4 A	**Parasession on Generative Studies of Chinese Grammar: The First Fifty Years**	**Chair: 李行德 张洪明** **Room: 二主楼 A401**
16:00-18:00	端木三　黄正德（C.-T. James Huang）　李艳惠（Y.-H. Audrey Li） 李兵　李亚非　戴浩一（H.-Y. James Tai）	

Session 4 B	**Chair: 潘悟云**	**Room: 二主楼 A402**
15:20-15:40	张维佳	卷舌音类的地理共现共变与汉语方言地理格局
15:40-16:00	时秀娟、冉启斌、石锋	为什么有的方言 n、l 不分——通音声母的鼻化对比度
16:00-16:20	吴瑾玮	從優選理論分析同化作用之方向性
16:20-16:40	彭心怡 (Hsin-yi, Peng)	雅瑤粵語沒有唇塞音的背後成因
16:40-17:00	袁丹	吴语中知照组三等字声母性质的语音学分析
17:00-17:25	Discussion	

Session 4 C	**Chair: 陶红印**	**Room: 二主楼 A403**
15:20-15:40	卢福波	“呢”—语用的否定性情态表达
15:40-16:00	殷树林	说话语标记“我看”
16:00-16:20	李广瑜	“不用”句的句式语义和表达功能
16:20-16:40	牛彬	互动式会话中“拜托”的语用新功能及其形成动因
16:40-17:00	李宇凤	论“不是”的基本确认意义
17:00-17:25	Discussion	

Session 4 D	**Chair: 潘秋平**	**Room: 二主楼 A404**
15:20-15:40	Invited Speaker 孙宏开	原始汉藏语结构类型的假设
15:40-16:00	杨作玲	先秦汉语的类型学指向
16:00-16:20	谭智颖	上古汉语的使动现象再探
16:20-16:40	Melody Ya-Yin Chang（张雅音）	On ‘Sluicing’ in Lesu Yi
16:40-17:00	Discussion	

Session 4 E	**Chair: 龚涛**	**Room: 二主楼 A406**
15:20-15:40	杨亦鸣、耿立波	普遍语法可及性：体特征到时特征的迁移——基于中国学生英语加工的神经电生理学研究
15:40-16:00	于秒	“数量+名词 1+的+名词 2”式歧义词组句法加工研究——来自眼动实验的证据
16:00-16:20	张强	汉语简单句移位加工的生命性作用机制
16:20-16:40	Gladys Tang（邓慧兰）Schola Lam Qun Li（李群）、Jia Li（李佳）、Karen Cheung	Deaf and hard of hearing (D/hh) learners’ acquisition of Chinese Ba-constructions

	Chris Yiu（姚勤敏）	
17:00-17:25	Discussion	

Session 4 F	**Chair: 姚荣松**	**Room: 二主楼 A407**
15:20-15:40	王洪君	演变整阶与内外层次——兼论层次的配整
15:40-16:00	吴瑞文	論山攝開口字在共同閩語中的演變與層次
16:00-16:20	张洪燕、张维佳	汉中中原官话深臻曾梗摄舒声字语音层次分析
16:20-16:40	黄晓东	百年来台州方言的语音演变
16:40-17:00	Discussion	

Session 4 G	**Chair: 盛玉麒**	**Room: 二主楼 A409**
15:20-15:40	Invited Speaker 李宇明	中国语言生活的时代特征
15:40-16:00	周荐	《新编国语日报辞典》收条立目指瑕
16:00-16:20	王燕燕	新加坡华人姓名拼写的演变及规范问题
16:20-16:40	陈希	论海峡两岸普通话/国语异读词审音的异同
16:40-17:00	曹巧玲	语用学的司法应用初探
17:00-17:25	Discussion	

Session 4 H	**Chair: 鄭縈**	**Room: 二主楼 A410**
15:20-15:40	遠藤雅裕	台湾海陆客语的动结述补结构
15:40-16:00	郭利霞	山西方言的语调问句——兼论语调问句的历史演变
16:00-16:20	林华勇、钟蔚苹	从西部粤语看汉语小称的语义问题
16:20-16:40	陈玉洁	商水方言中“着”的功能分析
16:40-17:00	范晓蕾	On the ‘VO 著’ Construction In Northwestern Chinese Dialects
17:00-17:25	Discussion	

Session 4 I	**Chair: 梁晓虹**	**Room: 二主楼 A411**
15:20-15:40	Invited Speaker Redouane Djamouri（罗端） Waltraud PAUL（包华莉）	“著”在元朝之前的歷時發展
15:40-16:00	姜南	汉译佛经句法关联词初探
16:00-16:20	周美慧	佛經音義書中梵漢特殊構音方式與音韻對應關係
16:20-16:40	袁健惠	六朝佛典受事话题句研究
16:40-17:00	陈秀兰	释“然可”“然许”
17:00-17:25	Discussion	

Session 4 J	**Chair: 胡建华**	**Room: 二主楼 A412**
15:20-15:40	王志洁（Jenny Wang）	多功能单音节“小副词”轻重音初探
15:40-16:00	李劲荣	情理之中与预料之外：也谈“并”和“又”的语法意义
16:00-16:20	高再兰	近代汉语高频副词“尽着”及其在方言中的分布
16:20-16:40	刘华丽	主观弱化义副词“不大”的立体考察
16:40-17:00	Discussion	

Session 4 K	Chair: 潘海华	Room: 二主楼 A413
15:20-15:40	李昊泽	Focus intervention effects in Mandarin wh-questions
15:40-16:00	祁峰　陈振宇	焦点实现的基本规则——以汉语 WH 词为例
16:00-16:20	张全生	从“来”的语法化看焦点结构与焦点标记的产生
16:20-16:40	郑伟娜	“连”字句焦点及与之相关的生成问题
16:40-17:00	Discussion	

Session 4 L	Chair: 王红旗	Room: 二主楼 A414
15:20-15:40	町田茂	从激活信息的语法手段来探讨汉语的语法范畴
15:40-16:00	桥本爱	“沉”与“重”的认知语义机制及其功能
16:00-16:20	裴吉瑞（Jerry Packard）	Memory and Structural Complexity in Mandarin Sentence Processing
16:20-16:40	於宁	Are We Facing toward the Future or Past in Chinese?
16:40-17:00	Discussion	

Session 4 M	Chair: 苏立昌	Room: 二主楼 A314
15:20-15:40	胡涵、顾钢、宁春岩	学龄前儿童看图叙事能力发展的评估
15:40-16:00	王昭	汉语儿童语言筛查工具
16:00-16:20	扈瑞艳	SLI-criteria-referenced Quick Repetition Test of Mandarin-speaking Children
16:20-16:40	邹晚珍、曾涛	The Development of Category Levels in Mandarin Speaking Children
16:40-17:00	杨小璐、陶宇	知识情态的早期习得——来自汉语普通话句末助词的习得证据
17:00-17:25	Discussion	

Evening：Free

Sunday, June 12, 2011

8:00-8:30　Breakfast

Session 5（8:30-10:10）

Session 5A	Chair: 史金生	Room: 二主楼 A401
8:30-8:50	邓思颖	浅论“行、知、言”三域与汉语的句法结构
8:50-9:10	大泷幸子	VA 结构，VdeA 结构，AdeV 结构的认知方式
9:10-9:30	张姜知	“把”字宾语的指称类型考察
9:30-9:50	朱庆祥	汉语准分裂句及其主宾互换的不对称性
9:50-10:10	Discussion	

Session 5 B	Chair: 裴吉瑞（Jerry Packard）	Room: 二主楼 A402
8:30-8:50	龙海平	“我是昨天买的票”句式及其相关问题
8:50-9:10	刘晓丽	说“我们”和“咱们”—基于语料库的考察
9:10-9:30	饶宏泉	从“怎么个 X 法”看框式结构的拓展
9:30-9:50	李计伟　姚晓东	论“介词+X+起见”格式
9:50-10:10	Discussion	

Session 5 C	**Chair: 曾晓渝**	**Room: 二主楼 A403**
8:30-8:50	黃菊芳 江敏華 鄭錦全	台灣南庄海陸客家話舌葉音的變異與消失
8:50-9:10	贝先明	方言的接触影响在声调格局中的表现
9:10-9:30	蒋平 陈艾舒	声调对语调的影响：跨语言听辨试验研究
9:30-9:50	王弘治	中古知章庄声母在汉语方言中演化的音系特征
9:50-10:10	Discussion	

Session 5 D	**Chair: 李兵**	**Room: 二主楼 A404**
8:30-8:50	张洪明、宋晨清、尹玉霞	Pingyao Tone Sandhi
8:50-9:10	张杰、刘江	The Productivity of Tone Sandhi Patterns in Tianjin Chinese
9:10-9:30	Hui-Chuan Joyce Liu	Tone Sandhi Errors in Taiwan Southern Min
9:30-9:50	Yan Dong	Merger or not: a case of Dalian tones
9:50-10:10	Discussion	

Session 5 E	**Chair: 遠藤雅裕**	**Room: 二主楼 A406**
8:30-8:50	鄭縈、謝職全	從客語重複義時間副詞的詞彙重整看方言的平整化過程
8:50-9:10	姚荣松	台湾闽、客语传统歌谣的语言比较研究
9:10-9:30	Mao-Chang Ku（古贸昌）	On the Dative and Causative HOO Constructions in Taiwanese Southern Min
9:30-9:50	范瑞玲	兒童習得客語名詞詞彙的策略
9:50-10:10	Discussion	

Session 5 F	**Chair: Vincent J. van Heuven**	**Room: 二主楼 A407**
8:30-8:50	林秉宥	The Transition Sound of the Chinese Function Word *a* '啊'
8:50-9:10	金憙成	韩国语陈述句语调的起伏度分析-以首尔话为主
9:10-9:30	张锦玉	普通话自然言语的呼吸特征研究
9:30-9:50	王萍、石林、石锋	普通话陈述句中的音高下倾和降阶
9:50-10:10	Discussion	

Session 5 G	**Chair: 黄行**	**Room: 二主楼 A409**
8:30-8:50	Invited Speaker 潘悟云	第三代音韵学
8:50-9:10	李千慧	從語言共性看上古音複聲母之系統及結構問題
9:10-9:30	赵彤	上古侯部爲什麽沒有二等韻
9:30-9:50	魏鴻鈞	上古脂微分部之檢討及其演變
9:50-10:10	Discussion	

Session 5 H	**Chair: Jen Ting（丁仁）**	**Room: 二主楼 A410**
8:30-8:50	柳娜	The comparison of Chinese bei passives and English get passives
8:50-9:10	苏珩骅	The Mental Verb Usage of *Bei* in Mandarin Chinese
9:10-9:30	颜力涛	汉语有"被"字标志的被动小句状语的语序问题—兼及被字句式的重新分析问题和能愿动词句法地位问题

9:30-9:50	伊藤智美	被字句的状语指向
9:50-10:10	Discussion	

Session 5 I	**Chair: 卢福波**	**Room: 二主楼 A411**
8:30-8:50	施春宏	动词拷贝句及其相关句式群的语法化过程
8:50-9:10	刘岩	从认知视野再看重动句
9:10-9:30	张孝荣	存活原则下动词复制句的生成研究
9:30-9:50	尚国文	The Subjectivity of Verb-Copying Constructions in Chinese
9:50-10:10	Discussion	

Session 5 J	**Chair: Choi Kyu-Bal（崔圭钵）**	**Room: 二主楼 A412**
8:30-8:50	蒋垂东	琉球官话课本中的福州方言词语 －以“仔细”为例－
8:50-9:10	萬波 楊鳳玲	論漢語方言詞彙的歷史層次研究——以“哭泣”及“嗅”義感官動詞為例
9:10-9:30	刘曼	《语言自迩集·谈论篇》对《清文指要》及其《续编》句式的“北京话化”
9:30-9:50	朴庸鎮	《老乞大》諸版本中的特殊語言現象－ 以’去’為例 －
9:50-10:10	Discussion	

Session 5 K	**Chair: 刘凤樨（Feng-hsi Liu）**	**Room: 二主楼 A413**
8:30-8:50	刘丹青	实词的叹词化和叹词的去叹词化
8:50-9:10	蔡淑美	类型学视野下的汉语“P+Vx+VP2"构式
9:10-9:30	李思旭	从假设连词的位置分布看“联系项居中原则”
9:30-9:50	王艳红	差比标记来源的类型学分析
9:50-10:10	Discussion	

Session 5 L	**Chair: 意西微萨·阿错**	**Room: 二主楼 A414**
8:30-8:50	Invited Speaker 戴庆厦	琅南塔克木语浊的塞音、塞擦音的死灰复燃
8:50-9:10	Paul Jen-kuei Li（李壬癸）	Linguistic Value of the Extinct Formosan Languages
9:10-9:30	刘秀雪	赛夏人使用客语的音韵特征
9:30-9:50	曾晓渝　尹世玮	回辉话的性质特点再探讨
9:50-10:10	Discussion	

Tea Break（10:10-10:20）

Session 6（10:20-12:00）

Session 6 A	**Chair: 蔡维天**	**Room: 二主楼 A401**
10:20-10:40	董正存	无条件构式的省缩及其句法后果
10:40-11:00	王芳	现代汉语条件句的语义研究
11:00-11:20	史金生　胡晓萍	“不一会”与“不一日”—谈包含否定形式的主观量成分的形成机

		制
11:20-11:40	尹洪波	汉语目的小句的标记和位置
11:40-12:00	Discussion	

Session 6 B	**Chair: 谢妙龄**	**Room: 二主楼 A402**
10:20-10:40	Invited Speaker 陶红印	汉语会话中立场表达的形式功能对应规律初探
10:40-11:00	樊长荣	基于语料库的数(量)名结构“两人”“两个人”的有定性分析
11:00-11:20	周滢照	关联理论视野下的短信交际
11:20-11:40	郇昌鹏	英汉“硬新闻”中作者立场标记语理解的对比研究——基于中国英语专业
11:40-12:00	Discussion	

Session 6 C	**Chair: 孙宏开**	**Room: 二主楼 A403**
10:20-10:40	Invited Speaker Marlys Macken	Tone in Chinese and Southeast Asian Languages
10:40-11:00	意西微萨·阿错	甘肃唐汪话的语音特点
11:00-11:20	王宇枫	莫语的性质及其形成机制（摘要）
11:20-11:40	Discussion	

Session 6 D	**Chair: 李壬癸**	**Room: 二主楼 A404**
10:20-10:40	高嶋謙一	On the Problem of Distinction between bi 比 and cong 从
10:40-11:00	黄勁偉、樊森	甲骨文真的有三宾语句吗？
11:00-11:20	刘新民	甲骨刻辞中的“获征”、“征获”浅析
11:20-11:40	Marco Caboara	The particle ye 也 in the Guodian manuscripts: a functional and typological approach
11:40-12:00	Discussion	

Session 6 E	**Chair: Alain Peyraube（贝罗贝）**	**Room: 二主楼 A406**
10:20-10:40	鄭縈、黃雯君	「然後」等順承類連詞的語法化歷程與其互動
10:40-11:00	佐佐木 俊雄	“一……就……”句式里的事件衔接及其偏离预期性
11:00-11:20	董宪臣	“难为”的词汇化
11:20-11:40	谢福	“别看”的语义演变探析——兼论与“虽然”的区别
11:40-12:00	Discussion	

Session 6 F	**Chair: 游汝杰**	**Room: 二主楼 A407**
10:20-10:40	占升平	常宁方言中“得”的能性用法
10:40-11:00	邓葵	双峰方言 “个”和“底”的功能演化链
11:00-11:20	NGAI Sing Sing	From classifier to indefinite article : 个[kəi^{213}] of the Shaowu dialect in Fujian
11:20-11:40	张金圈 储泽祥	无棣方言的领属定语标记“勒”和关系从句标记“底”
11:40-12:00	Discussion	

Session 6 G	**Chair: 张民权**	**Room: 二主楼 A409**
10:20-10:40	Invited Speaker 黄行	内爆音声母探源
10:40-11:00	李国春	《龙龛手镜》入声异读字研究
11:00-11:20	陈文备	汉语史上[j]、[n]、[ŋ]、[w]四韵尾对之前元音同化速度的不一致研究
11:20-11:40	郄远春	副词“还”的语音演变探源
11:40-12:00	Discussion	

Session 6 H	**Chair: 於宁**	**Room: 二主楼 A410**
10:20-10:40	张文忠、胡方慧	中国学生运用英语“V+Particle1+Particle2”结构的情况调查
10:40-11:00	朱宏一、许义强	20 年 HSK（初中等）考生信息统计与分析
11:00-11:20	刘佳	欧美学生“VP+起来”的习得情况考察
11:20-11:40	张瑞华	英汉文化概念化差异研究：以语料库为基础的情感概念的分析
11:40-12:00	Discussion	

Session 6 I	**Chair: 邓思颖**	**Room: 二主楼 A411**
10:20-10:40	Larry Hong-lin Li（李鴻麟） Jen Ting（丁仁）	Acceptability of Non-canonical Bei passives in Mandarin Chinese and its Implications for the Syntax of Bei passives
10:40-11:00	潘海华 乌云赛娜	汉语被字句与回指中心过渡关系的研究
11:00-11:20	杨炎华	“被+XX”的句法化及其词汇化
11:20-11:40	陳菘霖	漢語動詞「吃」從行動到蒙受意涵的發展
11:40-12:00	Discussion	

Session 6 J	**Chair: 刘泽民**	**Room: 二主楼 A412**
10:20-10:40	竺家宁	三國時代複音節動詞的發展與演化
10:40-11:00	王杏芳	中古漢語詞彙多數形式的發展
11:00-11:20	高詩茹	中古漢語詞彙的同素異序現象
11:20-11:40	周俊勋	中古汉语双及物结构研究
11:40-12:00	Discussion	

Session 6 K	**Chair: 宁春岩**	**Room: 二主楼 A413**
10:20-10:40	汪昌松	从新戴维森事件语义看汉语中的“旁格宾语句”
10:40-11:00	苏立昌、高剑	汉语作格动词的语义特征分析
11:00-11:20	杨彩梅	A Purely Lexical Analysis of the Distribution of Null Objects
11:20-11:40	李文静	汉语中动语态现象研究
11:40-12:00	Discussion	

Session 6 L	**Chair: 王志洁（Jenny Wang）**	**Room: 二主楼 A414**
10:20-10:40	安建芬	3-6 岁普通话儿童音位习得过程中的相关性研究
10:40-11:00	汪朋	早期汉语儿童语言中辅音和谐现象的描写与分析
11:00-11:20	Li Bin Liang Lei	Language Experiences in Perception of Pitches

11:20-11:40	张祯珍	王口方言儿童辅音习得顺序及辅音处理
11:40-12:00	Discussion	

Lunch（12:00-13:20）

Session 7（13:20-14:35）

Session 7 A	**Chair: 顾钢**	**Room: 二主楼 A401**
13:20-13:40	陈振宇	疑问代词或不定代词用法的限制条件
13:40-14:00	鹿钦佞、姚远	疑问代词任指用法的产生过程及其历史动因
14:00-14:20	Sho Fukuda	Grammaticalization of Potential Complements in Mandarin Chinese:Frequency and the Layering of Meaning
14:20-14:35	Discussion	

Session 7 B	**Chair: 李亚非**	**Room: 二主楼 A402**
13:20-13:40	Invited Speaker 刘凤樨（Feng-hsi Liu）	词组长短与词序的关系
13:40-14:00	朴正九、马雯娜	“形宾”结构带体标记的类型及语法特征
14:00-14:20	魏廷冀	Pronominal predicates in Mandarin Chinese: A light verb analysis
14:20-14:35	Discussion	

Session 7 C	**Chair: 竺家宁**	**Room: 二主楼 A403**
13:20-13:40	严翼相	探索百济汉字音和闽语的来源
13:40-14:00	刘泽民	闽语齐韵的语音历史层次分析
14:00-14:20	王为民	榆社方言的[±送气]分韵现象研究
14:20-14:35	Discussion	

Session 7 D	**Chair: Meisterernst, Barbara**	**Room: 二主楼 A404**
13:20-13:40	Invited Speaker Federico Masini（马西尼）	浅析“现代汉语”的形成时期
13:40-14:00	Tommaso Pellin	The Revolutionaries of Chinese Grammar Studies and Henry Sweet
14:00-14:20	Huba Bartos	Chinese linguistics in Central and Eastern Europe, and its contributions to linguistic theory
14:20-14:35	Discussion	

Session 7 E	**Chair: 顾阳**	**Room: 二主楼 A406**
13:20-13:40	Invited Speaker 戴浩一	Asymmetry between nominalization and verbalization in Chinese: Distinction between syntax and pragmatics
13:40-14:00	乐耀	引语如何传信？——论汉语引语的传信功能及相关问题
14:00-14:20	董粤章	构式、域矩阵与心理观照：认知语法视角下的“吃食堂”
14:20-14:35	Discussion	

Session 7 F	**Chair: 王红旗**	**Room: 二主楼 A407**

13:20-13:40	Li Thomas Hun-tak（李行德）、Zhuang Wu	A Corpus-based Analysis of the Subject Specificity Constraint in Mandarin Chinese
13:40-14:00	曾骞	汉语中名词性成分的指称连续性及类指的地位
14:00-14:20	黄劲伟	对一种双主语动宾谓语句的认知解读
14:20-14:35	Discussion	

Session 7 G	**Chair: 张文忠**	**Room: 二主楼 A409**
13:20-13:40	苏丹洁	用构式语块分析法重新审视“把”字句
13:40-14:00	刘文秀 施春宏	“有+N”构式的句法语义特征及其构式意义的浮现
14:00-14:20	张娟	试析“一 V 一 V”构式
14:20-14:35	Discussion	

Session 7 H	**Chair: 冯胜利**	**Room: 二主楼 A410**
13:20-13:40	端木三	Word-length Choices in Chinese and Syntactically Derived 2+1 of [V N]
13:40-14:00	朱赛萍	温州方言“V+NP_{Loc}”类结构的韵律语法分析
14:00-14:20	何丹鹏	从韵律语法角度比较普粤介词短语现象
14:20-14:35	Discussion	

Session 7 I	**Chair: 罗永现**	**Room: 二主楼 A411**
13:20-13:40	常俊之	拉祜族苦聪话 ɕi^{33} 的多功能性
13:40-14:00	谭晓平	苗瑶语的动结式
14:00-14:20	罗聿言	柚子名“栾、抛”考
14:20-14:35	Discussion	

Tea Break（14:35-14:50）

Session 8（14:50-16:30）

Session 8 A	**Chair: 林若望**	**Room: 二主楼 A401**
14:50-15:10	Invited Speaker 李艳惠 (Y.-H. Audrey Li)	A Unifying Approach to Deletion?
15:10-15:30	刘丽萍	动词短语省略句中“也”和“却”的研究
15:30-15:50	苏立昌 李建波	谈汉语复句的主语省略问题
15:50-16:10	崔显军	表达需要分析——汉语中的省力与冗余表达
16:10-16:30	Discussion	

Session 8 B	**Chair: 徐大明**	**Room: 二主楼 A402**
14:50-15:10	杨琳	词汇的形象化及其认识价值——以“抬杠”、“敲竹杠”等词为例
15:10-15:30	刘宗保	基于词类的汉语造词法认知研究——以“x 球”类名词为例
15:30-15:50	Yang Xiaodong	Some Remarks on Chinese Localizers
15:50-16:10	郭艳瑜	汉语成语中的隐喻和转喻分析

16:10-16:30	Discussion	

Session 8 C	**Chair: 张杰**	**Room: 二主楼 A403**
14:50-15:10	Te-hsin Liu	Template-induced Tone Sandhi in Northern Chinese Dialects - A Top-down Approach
15:10-15:30	李文欣	锡伯语增音的描述与分析
15:30-15:50	于辉	汉语借词音系学研究
15:50-16:10	鄭明中	南京方言兒化詞之優選理論分析
16:10-16:30	Discussion	

Session 8 D	**Chair: Marlys Macken**	**Room: 二主楼 A404**
14:50-15:10	Invited Speaker Vincent J. van Heuven	A relative measure of Interlanguage Speech Intelligibility Benefit at the language and dialect level
15:10-15:30	Caicai Zhang Gang Peng	Effect of Inter-Talker Variations on Cantonese Tone Categorization
15:30-15:50	Guangting Mai Gang Peng	Perceptual Discretization during Speech Identification: A Study on Intelligibility of Locally Time-Reversed Speech in Mandarin and Cantonese
15:50-16:10	尹玉霞	OCP Effects in Chinese Tone Sandhi
16:10-16:30	Discussion	

Session 8 E	**Chair: 李行德（Li Thomas Hun-tak）**	**Room: 二主楼 A406**
14:50-15:10	陈伟	汉语儿童量化扩展现象的初步研究
15:10-15:30	Fangyuan Yuan	Effects of Consciousness-Raising on Teaching Chinese Particle ‘LE’
15:30-15:50	张云秋、王悦婷	汉语儿童主观化表达发展的个案研究
15:50-16:10	Ying Liu Qian Du	Ideational, Interpersonal and Textual Positioning: Chinese Foreign Language (CFL) Learners’ Linguistic Construction of Self in Writing
16:10-16:30	Discussion	

Session 8 F	**Chair: 孔祥卿**	**Room: 二主楼 A407**
14:50-15:10	Invited Speaker 王宁	论汉字与汉语的辩证关系
15:10-15:30	吴继刚、毛远明	汉魏六朝碑刻异体字研究的几个问题
15:30-15:50	梁晓虹	《新譯華嚴經音義私記》與唐代俗字研究
15:50-16:10	何山	论汉字的书写理据
16:10-16:30	Discussion	

Session 8 G	**Chair: 端木三**	**Room: 二主楼 A409**
14:50-15:10	冯胜利	从“很大鼓舞”与“*大鼓舞”的对立看汉语韵律的形态功能
15:10-15:30	裴雨来	“管辖”、“音隔”及“核心重音范域”
15:30-15:50	董秀芳	汉语词汇双音化对于动词的论元结构的影响
15:50-16:10	Discussion	

Session 8 H	**Chair: 邢欣**	**Room: 二主楼 A410**

14:50-15:10	徐大明	语言经济与“语言不经济”：初步的理论探索
15:10-15:30	盛玉麒	基于流通语料库的指人“类词缀”研究
15:30-15:50	Wang Xiaomei Hans Van de Velde	The linguistic landscape in Belgian and Dutch Chinatowns
15:50-16:10	王宇波	基于网络媒体监测语料库的话语量的性别差异研究
16:10-16:30	Discussion	

Session 8 I	**Chair: Wynn Chao**	**Room: 二主楼 A411**
14:50-15:10	邓川林	现代汉语的结束类情状研究
15:10-15:30	王媛	现代汉语动结式的进行体
10:10-10:30	李文丹	Temporal/Aspectual Reference and the Syntax-Semantics Interface
15:50-16:10	Discussion	

Session 8 J	**Chair: 储泽祥**	**Room: 二主楼 A412**
14:50-15:10	朱彦	从关联表达看语境对词义的投射关系
15:10-15:30	徐婷婷	多义体势动词的语义扩展和组合能力匹配
15:30-15:50	张少英	同义动词词义分解理论探讨
15:50-16:10	Shan Wang Chu-Ren HUANG	Event Classifiers and Their Selected Nouns
16:10-16:30	Discussion	

Session 8 K	**Chair: Shyu Shu-Ing（徐淑瑛）**	**Room: 二主楼 A413**
14:50-15:10	Qiong-peng Luo Miao-Ling Hsieh	Three Types of Measurement in Chinese
15:10-15:30	张琳敏	Analyzing Chinese Dong-liang Expressions as Cognate Object Constructions
15:30-15:50	戚晓杰	汉语量词带形容词定语的功能考察
15:50-16:10	黄舒屏	Between Thought and Speech: Grammaticalization of "Say" in Three Languages
16:10-16:30	Discussion	

Session 8 L	**Chair: 杨亦鸣**	**Room: 二主楼 A414**
14:50-15:10	Ching-fen Hsu（許靜芬）	Semantic Deficiency of Contextual Coherence in People with Williams Syndrome:Evidence from Proposition Integration in Chinese
15:10-15:30	时雨	An Empirical Study on Language Learning Strategies Used by English Majors
15:30-15:50	徐娜娜	口误的概念与汉语口误分类
15:50-16:10	黄建丹	汉语单纯性语言障碍语法诊断测试题
16:10-16:30	Discussion	

Break（16:30-16:45）

Session 9（16：45-17：25）

Session 9	**Keynote Speech**	**Chair: 高嶋謙一 Room: To be announced**

16:45-17:25	Alain Peyraube（贝罗贝）	Typology, diachrony and cognition in Chinese

SESSION 10（17:30-18:20）IACL BUSINESS MEETING

Session 10	**IACL General Assembly**	**Chair: 李行德 IACL President Room: To be announced**
17:30-18:20	**IACL 会员大会，欢迎大家参加。**	

18:30-20:30 BANQUET, YSA/MJH COMPETITION ANNOUNCEMENT AND CEREMONY

Monday, June 13, 2011

7:30-8:10 Breakfast

Session 11(8:20-10:00)

Session 11 A	**Chair: Federico Masini（马西尼） Room: 二主楼 A204**	
8:20-8:40	龚涛、帅兰	Simulating the Emergence of Biased Word Orders in Isolating Languages
8:40-9:00	焦磊	使用蚁群仿生算法的元音演化模拟
9:00-9:20	李艳	有关《全球同源词》的一些问题
9:20-9:40	Discussion	

Session 11 B	**Chair: 李文丹 Room: 二主楼 A304**	
8:20-8:40	Yuchau E. Hsiao（萧宇超）	Cophonologies in Jincheng Triplication
8:40-9:00	Lin, Lu-Chien（林绿茜）	The Tonal Preservation in Syllable Contraction of Taiwan Mandarin
9:00-9:20	LI Bing and HE Junjie	On Glottal Stop's Co-occurrence with Rhymal High Vowels in Checked Syllables
9:20-9:40	Discussion	

Session 11 C	**Chair: 蒋平 Room: 二主楼 A312**	
8:20-8:40	Ping Wang	An OT Account of Chinese Coda Evolution
8:40-9:00	薛鑫	普通话阴平和去声之间的听感分界
9:00-9:20	Yasunori TAKAHASHI	An acoustic study of Narrow Tone Sandhi in Shanghai Chinese
9:20-9:40	李云靖	北京话儿化的 EMA 实验研究
9:40-10:00	Discussion	

Session 11 D	**Chair: 刘辰生 Room: 二主楼 A313**	
8:20-8:40	Chun-Jung Yang	On the Multiple Applicatives in Taiwanese Southern Min
8:40-9:00	Lawrence Y. L. Cheung	Wh-Placeholders in Chinese
9:00-9:20	Hongyuan SUN	Temporally (in)dependent readings of relative clauses in Chinese
9:20-9:40	马道山	Operator Movement to C in Chinese A-not-A questions
9:40-10:00	Discussion	

Session 11 E	Chair: Waltraud PAUL（包华莉）	Room: 二主楼 A402
8:20-8:40	Invited Speaker Wynn Chao	To be announced
8:40-9:00	Hui-Chin Joyce Tsai（蔡慧瑾）	The Split-DP Hypothesis in Chinese
9:00-9:20	Rui-heng Ray Huang（黄瑞恆）	Justifying Conjunction Reduction: Evidence from Mandarin Chinese
9:20-9:40	Hsiao-hung Iris Wu	Mapping Spatial PPs in Mandarin Chinese
9:40-10：00	Discussion	

Session 11 F	Chair: 张杰	Room: 二主楼 A403
8:20-8:40	石锋、王萍	边界调和焦点调
8:40-9:00	Liu Jiang	Durational Properties of Grammatical and Lexical Stresses in Nanchang Chinese and their Implications for Tonal Contrasts
9:00-9:20	Ying-Shing Li（李盈兴）	Lexical effects on incomplete nasal coda neutralization in Mandarin Chinese
9:20-9:40	胡伟	浮游特征在汉语声调音系中的解释力
9:40-10：00	Discussion	

Session 11 G	Chair: 严翼相	Room: 二主楼 A404
8:20-8:40	孙景涛	汉语方言中的除去口腔阻塞化
8:40-9:00	钱珍	西安话“下”的音变分析
9:00-9:20	徐宇航	潮州方言「唔字結構」合音條件及合音演變
9:20-9:40	Discussion	

Session 11 H	Chair: 戴庆厦	Room: 二主楼 A214
8:20-8:40	张民权	漢語上古音研究中的觀念與方法問題—歷史比較法則與漢藏親屬語言音系比較的时空問題
8:40-9:00	罗永现	汉台语关系词在谐声中的若干对应
9:00-9:20	施向东	早期反切資料在漢語上古音向中古音過渡時期的研究中的有益啟示

Session 12	Keynote Speech	Chair: 戴浩一（H.-Y. James Tai）Room: 南开大学主楼小礼堂
10:20-11:00	陆俭明	有关认知构式语法理论几个问题之我见

11:20-12:00 Closing Ceremony and Farewell Room: 南开大学主楼小礼堂

時相(事件)結構與時量詞組的句法與語意

林若望 (Jo-wang Lin)
交通大學
IACL 19, 6/11/2011

1. Introduction

- Situation Types （情狀類型）:
  activities 活動
  states 狀態
  accomplishments 完成
  achievements 瞬結

- Atelic situations (無界情狀)：活動情狀
  狀態情狀
- Telic situations（有界情狀）：完成情狀
  瞬結情狀

Telicity Tests

(1) a. John slept for 2 hours/*in 2 hours.

b. John was sick for two years/*in two years.

Telicity Tests

(2) a. John built a cabin in three years/?for three years.

b. John noticed the painting in a few minutes/*for a few minutes.

Syntactic Position of *for*- and *in*-Adverbials

- In English both *for*-adverbials and *in*-adverbials occur VP-finally. (For-adverbials may also occur sentence-initially.)
- The semantic interpretations are differentiated by means of the preposition *for* and *in*.

Chinese Durative and Completive Phrases

- How does Chinese express durative and completive times?
- Chinese durative and completive adverbials are not differentiated via a preposition but by means of their word order.
- Both durative and completive adverbials take the form of a bare temporal NP.
- Durative adverbials: postverbal position
  Completive adverbials: preverbal position.

Postverbal Durative Phrases: Atelic situations

- 在無界情狀中，時量詞組只出現於動後。

(3) a. 張三睡了兩個小時。
b. *張三兩個小時睡了。

- 動後時量詞組描述活動或狀態的時間持續長度。

Postverbal Durative Phrases: Atelic situations

- 及物句無界情狀

(4) a. 張三開了十年計程車

b. 張三開了計程車十年

c. *張三十年開了計程車

Postverbal Durative Phrases: Telic situations

- 時量詞組也可出現於有界情狀的動後位置。

(5) a. 張三打開窗戶20分鐘

b. 張三打開窗戶20分鐘了。

- 此時的時量詞組描述的是結果狀態的時間持續長度。
- 結果狀態亦是無界情狀。

Postverbal Durative Phrases: Conclusions

結論：動後時量詞組只能修飾無界情狀。

Preverbal Completive Phrases

- 動前時量詞組只能修飾有界情狀。
- 動前時量詞組測量的是有界情狀整個事件的所需時間長度。

(6) a. * 他一小時睡了。

b. *他十年開了計程車。

(7) a. 他十分鐘（就）寫好一封信/那封信。

b. 他一年/寫了兩本書。

c. 他可以1小時（就）爬到山頂。

一個有趣的問題

- 結論:

  (i) 持續時量只可修飾無界情狀

  (ii) 完成時量只可修飾有界情狀

- 問題: 究竟是什麼原因迫使持續時量必需出現於動後，完成時量必需出現於動前？

這篇論文的提案分析

- 持續時量及完成時量詞組是級項詞組（polarity items）。
- 持續時量透過認可語的 c-統治（c-command）來認可。
- 完成時量詞組透過指示語與中心語的一致性關係（Spec-head agreement relation)來認可.

NPI的認可方式

- 傳統上，NPI是透過認可語的c-統治來認可。

  I didn’t see anybody. vs.

  *Anybody didn’t see me.

- Benmamoun (1997): NPIs in Moroccan Arabic (MA) must be licensed overtly and can be licensed either when it is c-commanded by negation or is in Spec-head relation with it.

Licensing of NPI's Crosslinguistically

- In MA, sentential negation is usually expressed by two morphemes: *ma*, which is a prefix on the lexical verb or auxiliary and *š*, which occurs as a suffix.

(9) **ma**-ktəb-**š**

ma-wrote.3MS-š

'He didn't write.'

Licensing of NPI's Crosslinguistically

- Benmamoun (1997): in some Arabic dialects such as Sudanese and Syrian, sentential negation is expressed by *ma* only.

(10) Sudanese

m ā -fihim

neg-understood.3MP

'He didn't understand.' (Benmamoun 1997, 265)

- *ma* is the head of a negative projection located between TP and VP and *š* is a specifier or adjunct of a lower projection.
- The verb moves from V to T, carrying *ma* with it along its way up and *š* cliticizes to the verbal complex.

Licensing of NPI's Crosslinguistically

- In MA, NPIs such as *ḥətta* + NP (any NP) are in complementary distribution with *š* but *ma* is obligatory when an NPI occurs.

(11) a. ma-qrit ḥətta ktab
neg-read.1S even book
'I didn't read any book.'
b. *ma-qrit-š ḥətta ktab
neg-read.1S even book
'I didn't read any book.' (Benmamoun 1997, p. 269)

- In (11a), the NPI *ḥətta ktab* 'any book' is c-commanded by the negation contained within the verbal complex in T or by the trace in the head of NegP.

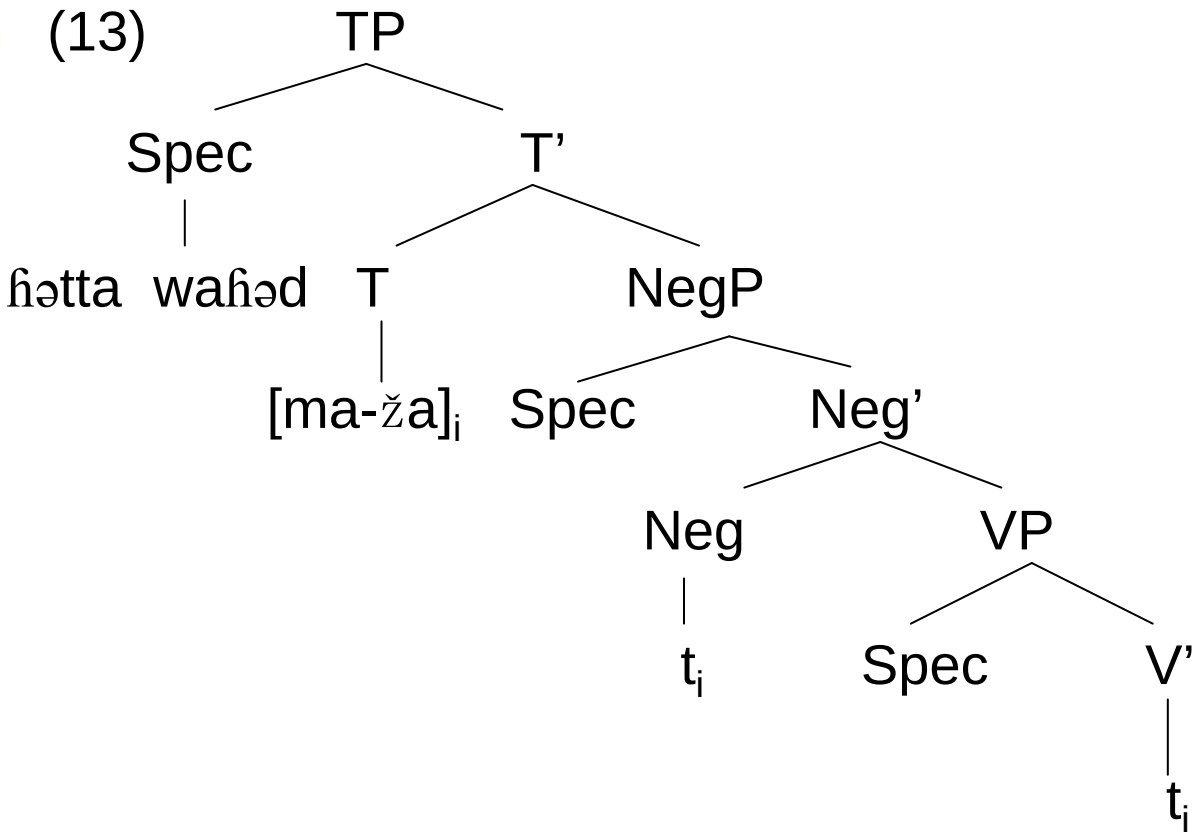
Licensing of NPI's Crosslingusitically

- The same NPI in MA may also occur in preverbal position as subject, as shown below.

(12) ħətta waħəd ma-ža
even one neg-came.3MS
'Anyone didn't come.'
(Benmamoun 1997, p. 272)

- If the subject NPI *ħətta waħəd* 'anyone' is assumed to occupy the SpecTP as shown in (13), it is not c-commanded by negation contained in the verbal complex or its trace.

- (13)



Licensing NPI's Cross-linguistically

- Benmamoun thus suggests that Spec-head agreement may also license an NPI in MA as given below:

(14) An NPI is licensed if:

(a) it is c-commanded by Neg or

(b) it is in Spec-head agreement with Neg or an element containing Neg.

Licensing NPI's Crosslinguistically

- Ouali (2005) has a similar proposal for Berber dialects.

- While NPI's like *no one* and *nothing* in Berber are licensed via c-command, NPI adverbs like *never* are licensed via Spec-head relation.

Licensing NPI's Cross-linguistically

- According to Quali, NPI's like *agidge* 'no one' in Tamazight are licensed in situ when c-commanded by Neg as in (17).

(17) ur iddi agidge
Neg go-perf-3s no one
'No one left.'

- Ouali follows the standard assumption that the negation marker *ur* heads its own maximal projection and is higher than IP/TP in Berber.

Licensing NPI's Cross-linguistically

- NPI adverbs like *urdgin* and *ursar* 'never' are licensed by Spec-head relation.
- They can only occur in a position preceding Neg and the verb as shown by the contrast between (19a) and (19b).

(19) a. ursar ur t-ughex
Never neg it-buy.Per.1s
'I will never buy it.'
b. *ur t-ughex usar
neg go.perf.1s never
'I will never buy it.'

Chinese NPI's

- The most well-known NPI in Chinese is *renhe* NP 'any NP', which can only be licensed by virtue of being c-commanded by its licensor.

(21) a. 我沒見到任何學生
b. *任何學生沒見到我

Chinese NPI's

- Not every NPI in Chinese is c-commanded by its licensor.

- *Conglai* 'ever' can only occur right before a negation word.

(22) *他從來說謊

(23) a. 他從來不說謊

b. *他不從來說謊

NPI Adverb: Sihao

(24) a. 他絲毫不掩飾自己的缺點

b. *他絲毫掩飾自己的缺點

NPI Adverb: Zenme

- Not every degree NPI adverb occurs before a negation word.

- *zenme* ‘how’ when interpreted as a degree word is an NPI and it must follow the negation word.

(25) a. 他不怎麼體貼
b. *他怎麼不體貼
c. *他怎麼體貼

Chinese NPI's: Summary

- 中文狀語性NPI有的可以出現於否定詞的前邊，有的則是後邊。
- 『怎麼』類型的NPI，只能出現於否定詞後邊，透過C-統治認可。
- 『從來』類型的NPI只能出現於否定詞前面，透過Spec-head的關係來認可。
- 因此，根據不同的NPI狀語，中文有兩種認可狀語性NPI的手段。

3. Durative and Completive NPs as Polarity Items

- 時量詞組可以出現於動前（完成時量）或動後（持續時量）。
- 動後時量詞組只能修飾無界情狀，所以持續時量詞組可以視為無界級項詞組（API—atelic polarity items）
- 動前時量詞組只能修飾有界情狀，所以完成時量可以視為有界級項詞組（TPI—telic polarity items）

API和 TPI的認可方式

- API 和TPI都是狀語性級項詞組，但透過不同的方式來認可。
- API和『怎麼』及『任何』比較像，是透過認可語的c-統治來認可。
- TPI和『從來』及『絲毫』比較像，是透過Spec-head relation來認可。

4. Structuring (A)Telicity

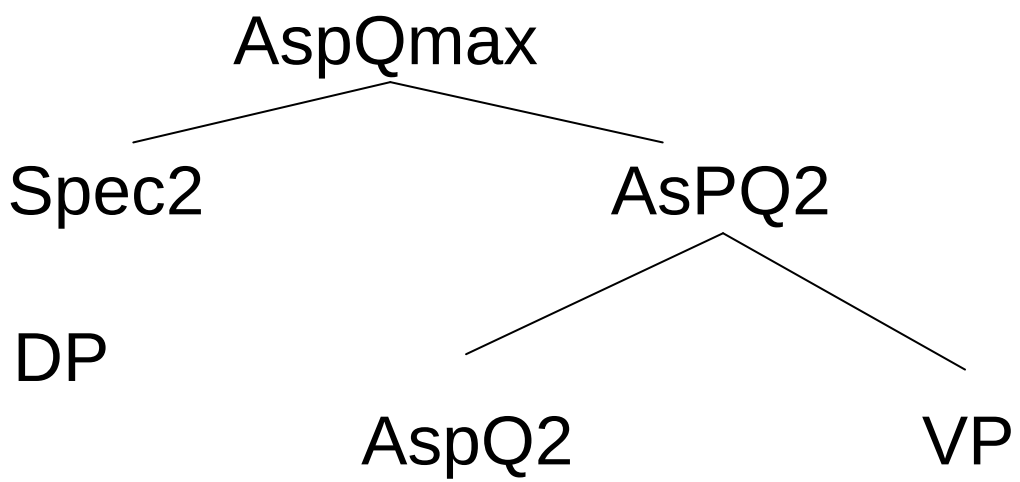
- To execute the licensing of ATI's and TPI's, I will adopt Borer's (2005) analysis of (a)telicity.

- Borer (2005): telicity is expressed in terms of the syntactic projection AspQmax, which is responsible for telic interpretation.

- The DP in the specifier position of AspQmax is the "subject-of-structured change". AspQ and its VP complement constitute a quantity (telic) predicate.

Structuring Telicity

(26)



copying by Spec-Head agreement

Subject of quantity Quantity Predicate

Telicity Assignment

- Borer (2005: 75): English verbal stems are inherently without quantity and thus in the absence of quantity structure are atelic.
- They are embedded within a quantity phrase, labeled AspQmax as shown in (26), which is headed by an open value [AspQ <e>#] in need of telicity assignment.
- Telicity assignment to [AspQ <e>#] can be mediated through Spec-head agreement between a quantity DP in the specifier of AspQmax and its head $AspQ_0$.
- If the DP in the specifier of AspQmax is a quantity DP, the quantity property can be copied onto [AspQ <e>#], forming a well-formed [[Spec AspP DP] [AspQ]] and making the AspQ and its c-command domain of a quantitiy or telic predicate.
- In the presence of direct telicity assignment such as the verbal prefix in Slavic languages, AspQ could be well-formed without a quantity DP in its specifier.

Atelic Structures

- The node occupied by AspQ might be semantically vacuous, perhaps having only case-assigning properties. Borer uses F_sP, headed by F_s, to represent such a projection.

- The merger of F_s blocks a telic interpretation, forcing a transitive derivation with a direct object marked as partitive in languages such as Finnish.

- Object arguments in such structures are assigned a default participant interpretation.

- The atelic interpretation is the result of the absence of a dedicated structure, namely, AspQ and there is no atelic structure as such.

- English verbs undergo overt short movement to a position higher than AspQ and movement of the object is also overt as in Runner's (1995) extensive discussion.

5. API的認可方式

- Tang (1990, 1994):

(27) [$_{FP}$ F [$_{VP}$ Duration [$_{VP}$ Object [$_{V'}$ V Duration]]]

- Lin (2008):

- Durative phrases can only adjoin to a homogeneous projection and the verb is moved to a higher functional head.

- Let us assume that a treatment of durative phrase along this line is correct. Furthermore, let us also assume that the verb moves overtly to AspQ/Fs or higher.

Explaining the Word Order

- Assumptions to make:

(28) A. As an adverbial, a durative phrase is subject to adjunct licensing in the sense of Travis (1988) according to which adverbials are licensed by the designated feature of a head.

B. Durative phrases can only be adjoined to a homogeneous projection as in Lin (2008) and licensed by the head of that homogeneous projection.

C. Durative phrases are atelic polarity items and hence must be licensed by an atelic licensor by virtue of being c-commanded by it.

D. It follows from the above three assumptions that a durative phrase must be licensed by the atelic head of the maximal projection to which it is adjoined.

Explaining (3): 張三睡了兩個小時

- (3) is an intransitive activity sentence. There is no DP in Spec of AspQmax that may Spec-head agree with the head AspQ, giving the latter a range assignment.

- Therefore, the verb must not move to AspQ but to some other functional projection above VP from which it c-commands the durative phrase which adjoins to VP. The durative phrase in (3) is thus properly licensed as an API.

Explaining (4):

- (4)張三開了10年計程車/張三開了計程車10年

- The object argument in (4) receives a default participant interpretation and is not a quantity DP.
- Therefore, the position to which the verb moves should not be AspQ, but F_s, from which it c-commands the durative phrase. So, the durative phrases in (4) are licit API's.

Explaining (6)

- (6) a. *他一小時睡了
  b. *他10年開了計程車。

- Logically, there are two possible positions for the durative phrases in (6a) and (6b). They are adjoined to either VP or some functional projection FP dominating VP.

- In either case, the verb or the functional head F to which the verb moves does not c-command the durative phrase. Therefore, the durative phrases in (6) are not properly licensed as an API.

Postverbal Duratives in Telic Eventuality

- Postverbal durative phrases are also compatible with telic sentences.
- But in such cases, the durative phrase measures the time length of the result state sub-eventuality rather than the process sub-eventuality or the whole event.
- How are such durative phrases licensed?

Postverbal Duratives in Telic Eventuality

- von Stechow (1995, 1996), Ramchand (2008), Lin (2008): telic verbs are decomposed into subcomponents overtly in syntax and hence those sub-eventualities are accessible to syntactic modification and semantic composition.

- Ramchand (2008): there are three sub-event projections for a lexical expression that entails a result state, namely vP, VP and RP.

- vP is the projection that introduces the causation event and licensing different types of external argument; VP specifies the change or process sub-event and licenses the entity undergoing change or process; RP gives the telos or result state of the event and licenses the entity that holds the result state.
  TreeDecomposition.doc

Explaining (5a)

- (5a)張三打開窗戶20分鐘
- Lin (2008): the durative phrase in a telic sentence such as (5a) is adjoined to RP, the only homogeneous projection in the structure.
- Therefore, semantically, the durative phrase in (5a) measures the time length of the result state rather than the time length of the whole event.

Explaining (5a)

- The head of the result phrase must move overtly to the higher AspQ.

- The combination of the verb and the result head presumably would give AspQ a direct telicity assignment, making the interpretation telic.

- (29) …[…[$_{AspQ}$ dai + kaj]$_{i,j}$…[$_{VP}$…[V t_{i+i}] [$_{RP}$ ershi fenzhong [RP...[R t_j]...]]]]

Explaining (5a)

- Now the crucial question is how the durative phrase *ershi fenzhong* ‘twenty minutes’ in (29) is properly licensed.

- To be licensed as an API, it must be c-commanded by the result head *kai* ‘open’ whose maximal projection it adjoins to.

- Although the combination of an activity verb with a result verb gives rise to a telic verb, arguably both the index of the activity verb and the index of the resultative verb percolate.

6. Licensing TPI's

- As noted, some NPI adverbs such as *conglai* 'ever' and *sihao* 'a bit' are only licensed by virtue of being in a spec-head relation within the NegP projection but not by a c-command relation.

- Preverbal completive α-time phrases are licensed as TPI's in a similar manner.

- As a TPI, a completive phrase must be licensed by a telic head. So a TPI is adjoined to AspQmax under our theoretical assumptions.

Explaining (7a)

- (7a)他10分鐘就寫好一封信。
- (30) …[AspQ^{max} shi fenzhong [AspQ^{max} …[AspQ xie-hao$_i$ [VP …t$_i$…
- As a TPI, a completive phrase must be licensed by a telic head. So a TPI is adjoined to AspQmax under our theoretical assumptions.

Explaining (7a)

- Strictly speaking, the completive phrase *shi fenzhong* ‘ten minutes’ in (30) is not the SpecAspQmax, as this position might be occupied by a DP agreeing with AspQ in terms of quantity property.

Explaining (7a)

- It is a well-known fact that adjuncts such as attributive adjectives may bear agreement relations with a noun they modify as in the following German example.

(31) Reisengroße Eisbären

huge.PL polar.bears

(Svenonius 1994, example (8b))

Explaining (7a)

- The inflection on attributive adjectives is sometimes referred to as ‘concord’ rather than agreement as in Pollard & Sag (1993), who argued that the feature by which an AP ‘selects’ the NP which it modifies is also the feature relevant to concord.
- I would like to adopt a looser definition of specifiers according to which multiple specifiers are allowed.
- More precisely, a phrase XP m-commanded by a head α is a specifier of α if XP is in an agreement or concord relation with α.
- On this assumption, the durative phrase in (30) is licensed as a TPI by virtue of being in a specifier-head relation with the head AspQ.

7. Apparent Counterexamples

- (32) 約翰三天在台北，(*四天在新竹)

The function of the preverbal time phrases is not to measure the time length of an atelic eventuality but to serve as the topic or reference time of the sentence.

Explaining the Counterexample

- The semantics of (32) is completely identical to (33).

(33) 約翰一星期中有三天待在台北，四天住新竹

Explaining the Counterexample

- For (32) and (33) to be true, it actually doesn't have to be the case that John must stay in Taipei for exactly 72 hours and in Hsinchu for exactly 96 hours.

- Imagine the following scenario. John's home is in Hsichu but he has to work in Taipei three days a week. So he commutes to work in Taipei every Monday morning but comes home at late night on Wednesday.

Explaining the Counterexample

- The above analysis may also provide a light into the question why examples like (32) always need two contrastive α-time phrases to make the discourse coherent.

- A topic or reference time is usually a definite time interval. Thus, an indefinite time phrase normally may not serve as the topic or reference time of the sentence.

- However, if the context has another contrasting indefinite time phrase, the intervals denoted by the two contrastive indefinite noun phrases will become more salient, thus licensing them to serve as a topic or reference time.

Explaining the Counterexample

- In other words, the function of the preverbal α-time phrases in (32) and (33) are similar to the definite topic or reference time *mingtian* ‘tomorrow’ and *houtian* ‘the day after tomorrow’ in (34).

  (34) 約翰星期一待在台北，星期二住在新竹。

- For (34) to be true, John’s stay in Taipei does not have to be exactly the 24 hours of Monday; nor is it required that he must be in Hsinchu for the whole 24 hours of Tuesday.

8. Conclusion

- Completive phrases can only occur preverbally, whereas durative phrases can only occur postverbally.
- The different word orders of completive and durative phrases may follow from the assumption that they are TPI's and API's.
- TPI's and API's are subject to different licensing mechanisms. Namely, TPI's are licensed by virtue of being in a specifier-head agreement relation with a telic head whereas API's are licensed by virtue of being c-commanded by an atelic licensor whose maximal projection it adjoins to.
- Some preverbal duratives are not real durative phrases but topic or reference time phrases during or within which an eventuality occurs.