



How to Read English Textbooks

如何閱讀原文書

University Lecture Series, 2012

Yin-Jung Chang, Associate Professor

張殷榮 副教授

Dept. of Optics and Photonics
National Central University

國立中央大學光電科學與工程學系

Oct. 16, 2012

- **BEFORE WE START THIS TALK, ...**
- BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...
- DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS
- SOME MYTHS AND FACTS
- OVERCOME THE OBSTACLES
- OTHER USEFUL TIPS
- CONCLUSION

❖ SOMETHING THAT I WANT TO MAKE IT CLEAR

- I am NOT a language-learning expert
我不是語言學習專家
- I never learned English until that summer right before my junior high years.
直到升國一那一年暑假前我從沒學過英文
- It took me the whole summer to learn K. K. phonetic symbols WELL
我花了一整個暑假學好K.K.音標
- I should admit that learning English was not easy for me, at least for the first 3 years!
我必須承認剛學英文時的頭三年，學習英文實在不是件容易的事
- In what follows, I'd like to share my opinions/experience, from an ordinary English learner perspective, that have developed and evolved for more than 25 years.
接下來的分享,都是基於我過去20多年來學習英文所發展與演進而來的看法和經驗

❖ SO WHY LEARN ENGLISH?

- It is the most commonly used foreign language.
- Knowing English makes you more employable around the world!
- To excel in many fields, particularly science/engineering/international businesses, you must know English.
- Get the first-hand information directly and you won't be fooled around by the translation/interpreter. No subtitles when watching movies or films on Youtube.
- Speaking English opens opportunities to jobs, connections, even ... love affairs!
- Learn another culture.
- Earn more ... (this might be the strongest incentive)!!



❖ IT'S TERRIBLE THAT ...



國軍460億迅安系統 未納戰備形同浪費

【聯合報／記者許紹軒／台北報導】

2012.10.01 02:58 am

軍方耗資四百餘億元整合國軍「指管通情監偵」資訊的迅安系統已完成多年，至今未納入軍方戰備，立委馬文君表示，迅安除首頁為中文，其餘均是英文介面，由於基層官兵英文程度待加強，導致衡山指揮所內的迅安系統功能雖強，但卻不受官兵青睞，長期被視為測試系統，數百億元的投資形同虛擲。

馬文君說，參謀本部已著手進行迅安系統的中文化，但因系統參數掌握在外國人手，勢必還要付出一大筆錢，可能超過一千萬元台幣。

迅安系統就是國軍建軍史上著名的博勝案，系統建置初衷是想把三軍的指揮、管制、通訊、情報、監測與偵察等多項功能整合在一個作業平台上，方便三軍情資交流。

最初美軍提出的規劃經費超過一千億元，我方因預算有限，最後僅執行三分之一，大約四百六十餘億元。

馬文君說，迅安系統於二〇〇九年完成系統安裝與測試，一年的維持費用高達廿億元，但國防部考量到空軍改善雷達功能的安宇計畫尚未完成，通信次長室在二〇一〇年頒發命令讓迅安系統「試行運作」，待安宇計畫完成再納入戰備。

她表示，安宇計畫已於二〇一〇年完成驗收，但迅安卻遲未納入戰備，地位只能算是「備援系統」；由於迅安大部分建置在海軍，在司令董翔龍的督促下，使用率還算可以，但在衡指所，迅安只是備用系統，「機組被放在桌子下面」。

馬文君指出，迅安花了數百萬元才買到中文首頁，其餘的內容都是英文專業術語及複雜訊息，讓我方操作人員產生排斥感，軍方現已意識到問題的嚴重性，正透過駐美採購團向美國海軍專案管理辦公室了解如何執行系統中文化。

❖ AND MORE ...



核4管線亂裝 台電：我們智能不足

2012-10-01 | 中國時報 | 李宗祐 / 台北報導

核四廠一號機電氣工程「錯用」金屬導線管事件，原能會上周完成調查報告，決定裁處三級違規並罰款十萬到五十萬元，同時要求台電全面拆除重裝符合安全規定的金屬導線管。原能會高層官員強調，台電應該不是故意犯錯，而是龍門（核四）施工處和相關廠商「智能不足」、對輻射一無所知，才造成這起事件。

這次爆發錯用風波的可撓性（可彎曲）金屬導線管最主要是保護連接核電廠各種設備的電纜線，避免因水汽滲透造成短路，或長期處於輻射環境下造成老化及脆化，確保核能機組安全。但今年五月間卻爆發台電在採購驗收時，涉嫌「放水」護航，讓廠商以不符輻射安全規範的防水產品取代抗輻射導線管，遭廉政署調查。

相關官員強調，原能會上周完成的調查報告，無關台電採購驗收是否涉及弊案，純粹是從核能安全管制立場介入調查。依規定，無論是反應爐所在的核島區，或其他設備所在的非核島區，只要被劃設為輻射區域且跟安全有關設備，都要使用兼具防水與抗輻射的NW C型金屬導線管；非輻射區域但與安全有關的設備，使用有防水功能的Z H U A金屬導線管即可。

「台電除了在核島區反應爐控制棒驅動系統使用NW C型外，其他被設為輻射區域的安全相關設備，使用的都是Z H U A，明顯違反安全規定。」相關官員難以置信地說，海水幫浦室是非輻射區域，「那邊不必抗輻射，他們把最好的NW C裝上去！」類似案例還很多，有些該裝NW C的、卻沒有裝；有些不用抗輻射的、卻裝了NW C，顯示台電和廠商根本就搞不清楚什麼是輻射區域！

官員說，「台電應該不是故意裝錯，而是沒有常識。我們罵他們，他們回說：『對不起，我們智能不足！』」台電和廠商還有個嚴重的問題，就是英文看不懂，錯誤解讀美商奇異公司設計圖和施工規範。

若以金屬導線管工程標案金額超過四億元估算，拆換重裝經費至少上億元跑不掉。官員強調，原能會的職責是安全管制，要花多少錢，是台電的問題。重點是換裝完成後，還要重新做安全測試，要花很多時間，不曉得核四到底什麼時候可以完工？

- BEFORE WE START THIS TALK, ...
- **BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...**
- DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS
- SOME MYTHS AND FACTS
- OVERCOME THE OBSTACLES
- OTHER USEFUL TIPS
- CONCLUSION

❖ SOME OPINIONS I WANT TO SHARE WITH YOU

**READING ENGLISH TEXTBOOK MEANS (TO A LARGE EXTENT)
STUDYING EVERY SINGLE DAY!**

閱讀原文書幾乎等同於每天讀書!!

- Don't start reading English textbooks before the exam(s).
別在考前才開始讀原文書
- Personally, I don't believe there is such thing like quick learning when talking about learning foreign languages.
對一般人而言，學習外語沒有速成這回事
- Learning just about everything is like rolling a snowball!
學習每一件事其實就像是滾雪球一樣
- Patience, Patience, and Patience!
耐心、耐心、還是耐心!
- Your effort will definitely be paid off in the future, if not now.
你的努力將來(如果不是現在)一定會得到回報!



- BEFORE WE START THIS TALK, ...
- BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...
- **DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS**
- SOME MYTHS AND FACTS
- OVERCOME THE OBSTACLES
- OTHER USEFUL TIPS
- CONCLUSION

❖ COMMON DIFFICULTIES

- 看到文字多的書(不論是否是外文書)，就頭大，甚至根本就不想看!
- 每個字都認識我，但是有很多字我都不認識!?

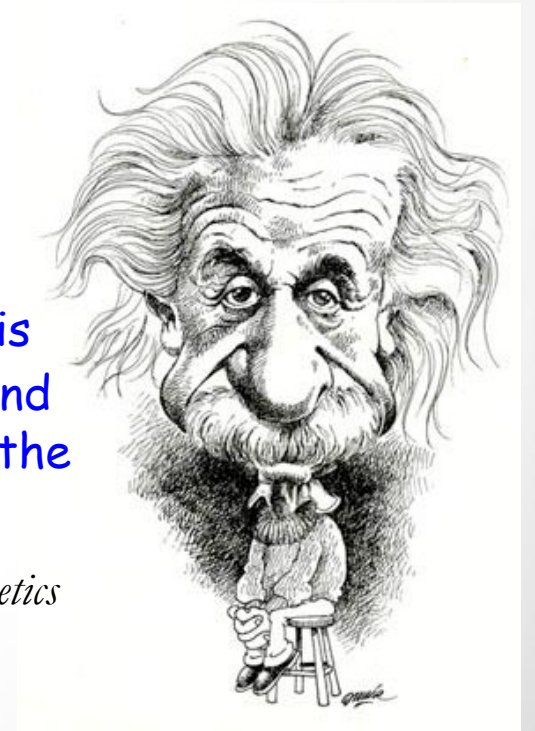
"As far as Kepler was concerned, elliptical orbits were merely an ad hoc hypothesis, and a rather repugnant one at that, because ellipses were clearly less perfect than circles."

~ *S. Hawking, A Brief History of Time*

- 查生字時，挑不出適當的意思!
- 查了所有的生字，還是讀不懂!

The curl of a vector field \mathbf{A} is a vector whose magnitude is the max net circulation of \mathbf{A} per unit area ds as $ds \rightarrow 0$ and whose direction is the normal direction to the area when the area is oriented to make the net circulation maximum.

~ *D. K. Cheng, Field and Wave of Electromagnetics*



❖ COMMON DIFFICULTIES (Cont'd)

■ 專業術語(terminology)讀不懂?!

"David Smith made a significant contribution to location theory by introducing **space-cost curves** and **spatial margins of profitability**"

~ M. G. Bradford and W. A. Kent, *Human Geography*

"We shall now assume that the actual distribution (N_1, N_2, \dots, N_n) of particles among **energy states** which is observed in **equilibrium** is essentially that which can be realized in the maximum number of **statistically independent ways, ...**"

~ J. P. McKelvey, *Solid State and Semiconductor Physics*



❖ COMMON DIFFICULTIES (Cont'd)

- 看了半天，感覺還是抓不到重點! (And this may happen even down to a single sentence!)

"For example, the distinctive set of beliefs that many people in the dominant culture associate with progress and modernity fosters mental habits particularly unsuited for recognizing either implicitly assumed beliefs or evidence that challenges the idea that change is inherently progressive."

~ C. A. Bowers, *Education, Cultural Myth, and the Ecological Crisis*

- 好不容易讀完一頁，但一小時以經過去了!



- BEFORE WE START THIS TALK, ...
- BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...
- DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS
- **SOME MYTHS AND FACTS**
- OVERCOME THE OBSTACLES
- OTHER USEFUL TIPS
- CONCLUSION

❖ SOME MYTHS

- 以為**不需**每個單字都查字典
- 閱讀英(外)文時想逐字翻譯成中文
- 以為**不需**認得每個單字**也能**讀懂整篇文章
- 以為**無須**了解英文文法，**一樣可以**讀懂原文書



❖ FACTS

- 無需每個單字都查字典僅限於略讀時
- 詳讀、精讀時仍鼓勵大家每個生字都查字典
- 想逐字翻譯成中文在剛接觸原文書時是正常的，但應盡快度過這個階段，**But How?**



Read as much as you can and read
everyday!

❖ FACTS (Cont'd)

- 是的，英文文法非常重要! 因為
- 很抱歉，英文不是我們的母語
- 會簡單的日常生活會話，不等同於英語學習的全部!
- 若不會文法，在面對較複雜的句子時，很輕易地就直接投降!

"For example, the distinctive set of beliefs that many people in the dominant culture associate with progress and modernity fosters mental habits particularly unsuited for recognizing either implicitly assumed beliefs or evidence that challenges the idea that change is inherently progressive."

~ C. A. Bowers, *Education, Cultural Myth, and the Ecological Crisis*



- 無法拆解較複雜的句子時，很多人(包括有些專家學者)都會教你從關鍵字去推測(這是好聽的說法)文意。但問題是：

你的理解與作者的原意100%相符嗎?還是誤解了作者的原意而仍沾沾自喜地說: 我讀懂了!

What Does This Mean?

如果真是這樣，正確理解原文書的內容，竟成了.....

機率問題?!

考場上應付考試的技巧 \neq 學習或做學問的方法!



- 閱讀原文書除了藉以吸收第一手的資訊與知識外，它其實是語言學習的一部分
 - 語言的學習其實有其層次
 - 學習一種語言其實是學習它的文化

- WHY LEARN ENGLISH?
- BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...
- DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS
- SOME MYTHS AND FACTS
- **OVERCOME THE OBSTACLES**
- OTHER USEFUL TIPS
- CONCLUSION

❖ TEAR THEM DOWN ONE-BY-ONE ...

■ 看到文字多的書(不論是否是外文書)，就頭大，甚至根本就不想看



- ✓ 暫時忽略有多少要讀，把目標縮小到一段或一頁(page)
- ✓ 累積成就感: 設定時間，要求自己在時限內讀完一段或一頁
- ✓ 日起有功: 天天都讀一點

■ 每個字都認識我，但是有很多字我都不認識



- ✓ 平時就多讀多背生字
- ✓ 熟悉音標與字根字首能幫助記憶單字
- ✓ 由學句子或讀文章來增強對單字的印象
- ✓ 閱讀原文書本身就是學習單字的好時機!

❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

■ 查生字時，挑不出適當的意思



- ✓ 由上下文判斷出最適當的解釋
- ✓ 當最完整的英漢字典也沒有最適當的翻譯時，找好的英英字典吧！

Yahoo! 奇摩英漢字典

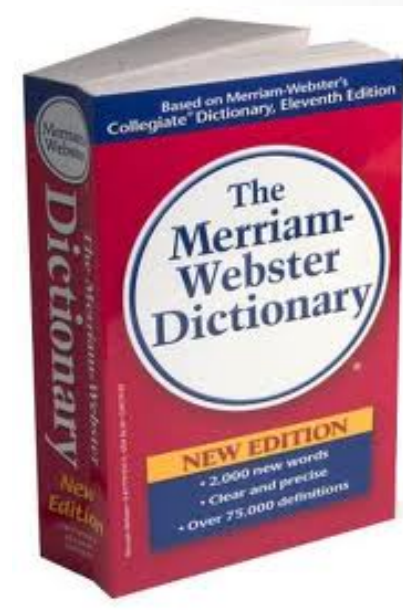
<http://tw.dictionary.yahoo.com/>

Yahoo! 奇摩迷你筆字典(附有發音功能)

<http://tw.mini.yahoo.com/option.html>

Merriam-Webster 英英字典

<http://www.merriam-webster.com/>



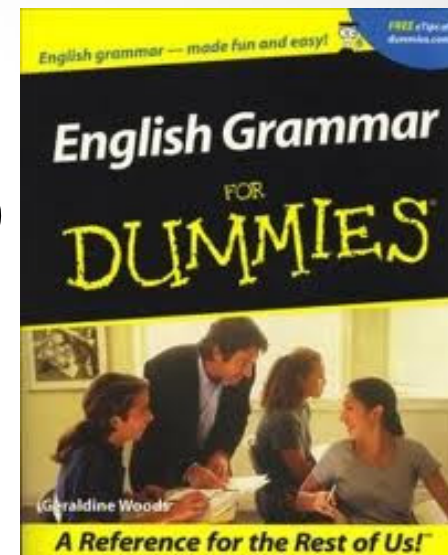
❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

■ 查了所有的生字，還是讀不懂



☹ 文法的問題

If not in plain English (關係子句、省略句、倒裝句、插入句、分詞構句.....)



☹ 背景知識不足的問題

"For example, the distinctive set of beliefs that many people in the dominant culture associate with progress and modernity fosters mental habits particularly unsuited for recognizing either implicitly assumed beliefs or evidence that challenges the idea that change is inherently progressive."

~ C. A. Bowers, *Education, Cultural Myth, and the Ecological Crisis*

❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

"The curl of a vector field \mathbf{A} is a vector whose magnitude is the max net circulation of \mathbf{A} per unit area ds as $ds \rightarrow 0$ and whose direction is the normal direction to the area when the area is oriented to make the net circulation maximum. "

~ D. K. Cheng, *Field and Wave Electromagnetics*



😊 文法的問題

✓ 重新學習、複習、熟悉文法

"For example, the distinctive set of beliefs that many people in the dominant culture associate with progress and modernity fosters mental habits particularly unsuited for recognizing either (implicitly assumed beliefs or evidence) that challenges the idea that change is inherently progressive."

❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

😊 背景知識不足的問題

- ✓ 從入門的中文書(或文章段落)讀起
- ✓ 複習以前學過但又還給老師的東西
- ✓ 從基本的定義或原理著手
- ✓ 窮盡一切方法仍不可得時，直接找老師問

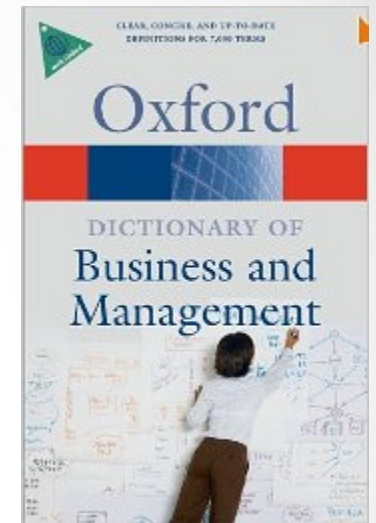
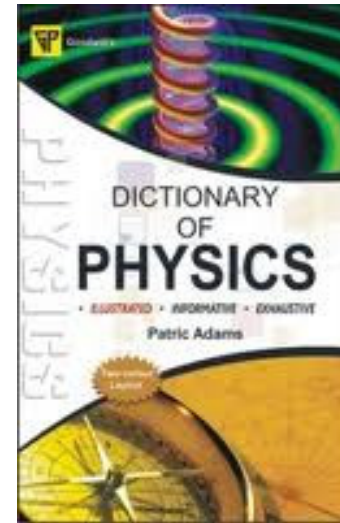
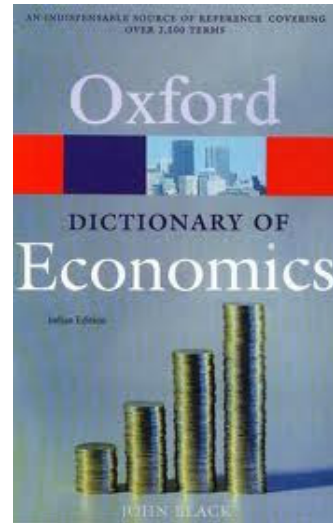


❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

■ 專業術語讀不懂



✓ 尋求專業的學科辭典



✓ 翻閱每一章節後面的Summary或Glossary, if any

✓ 善用網路(Google、Wikipedia等)作關鍵字的中英文搜尋

❖ TEAR THEM DOWN ONE-BY-ONE ... (Cont'd)

■ 看了半天，感覺還是抓不到重點!



✓ 見林 See the forest

➔ 閱讀前先瀏覽目錄 (Contents)

➔ 勾勒出該章節(或整本書)的輪廓

➔ 了解該章節所描述知識架構的來龍去脈

✓ 見樹 See the trees

➔ 基礎閱讀(Elementary Reading)

➔ 先了解至少一節(section)或2至3頁內容的大意

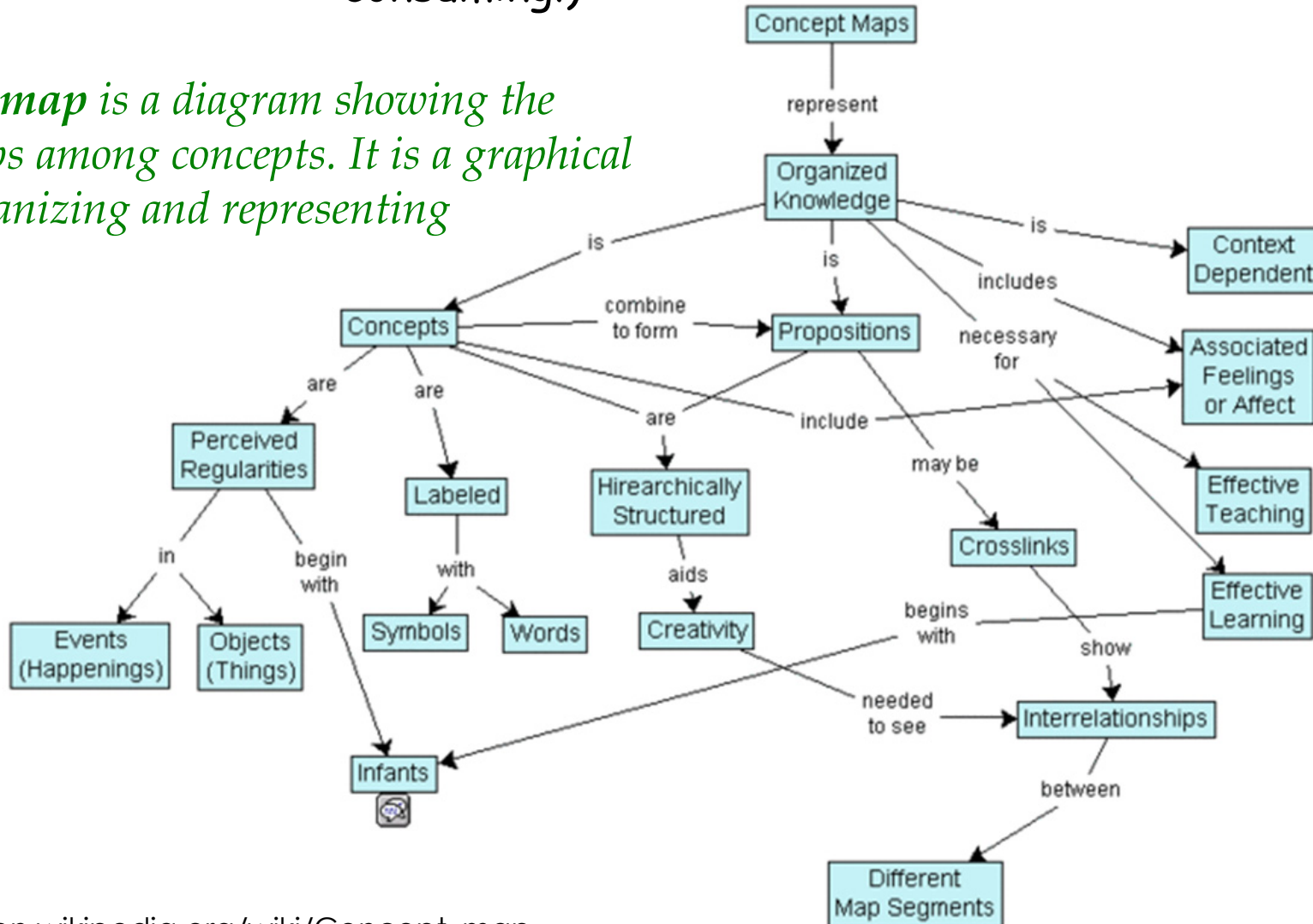
➔ 分析閱讀(Analytical Reading)

➔ 完整的精讀基礎閱讀的範圍



- 勾勒重點，重視邏輯與文意或思考轉折處
- 利用頁緣或便利貼，將重點、脈絡用自己的話寫在該段落的旁邊 (and yes, it's very time consuming!)

A concept map is a diagram showing the relationships among concepts. It is a graphical tool for organizing and representing knowledge.



http://en.wikipedia.org/wiki/Concept_map

→ 閱讀完一章後，複習整理文章重點以建立心智圖 (Mind Map) (and yes, it's also takes time!)



http://en.wikipedia.org/wiki/Mind_map

✓ 見樹亦見林 See both the forest and the trees

➔ 主題閱讀 (Syntopical Reading)

➔ 多方收集不同作者或資料來源對同一主題的描述

➔ 要能做到這一步，通常必須對該主題的背景知識已有一定程度的了解

■ 好不容易讀完一頁，但一小時已經過去了



✓ 萬事起頭難! Be patient, hang in there, and it will be getting better!

✓ 團結力量大 - 組讀書會!



- WHY LEARN ENGLISH?
- BEFORE LEARNING HOW TO READ ENGLISH TEXTBOOKS ...
- DIFFICULTIES OFTEN ENCOUNTERED WHEN READING ENGLISH TEXTBOOKS
- SOME MYTHS AND FACTS
- OVERCOME THE OBSTACLES
- **OTHER USEFUL TIPS**
- CONCLUSION

❖ UNDERSTANDING THE STRUCTURE OF A PARAGRAPH

英文文章中各段落通常可約略切割成以下三部分

■ 主題句 (Topic Sentence)

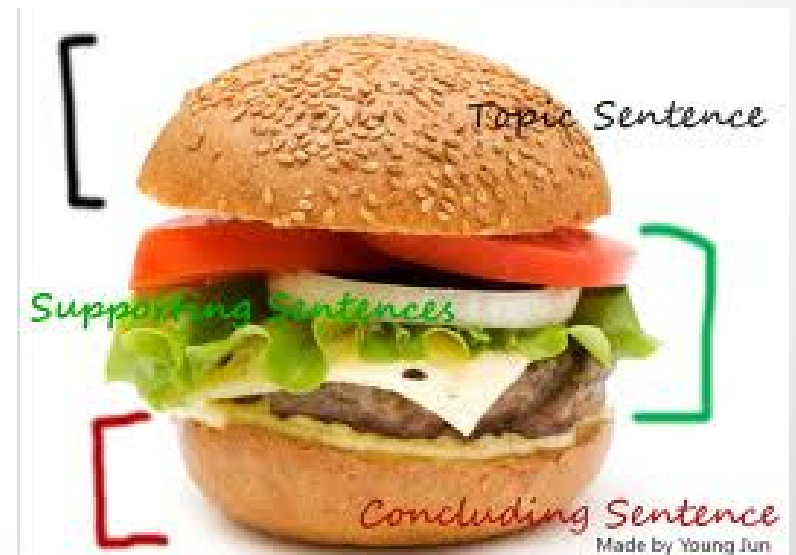
- ✓ 通常出現在每一段落的第一句
- ✓ 其用以描述該段的中心主旨(main idea)

■ 段落主體 (Body of the Paragraph)

- ✓ 也就是所謂的 Supporting Sentences
- ✓ 其提供足以支持該段中心主旨所需的詳細說明(details)

■ 結論句 (Concluding Sentence)

- ✓ 對該段內容的總結或摘要
- ✓ 為下一段埋下伏筆



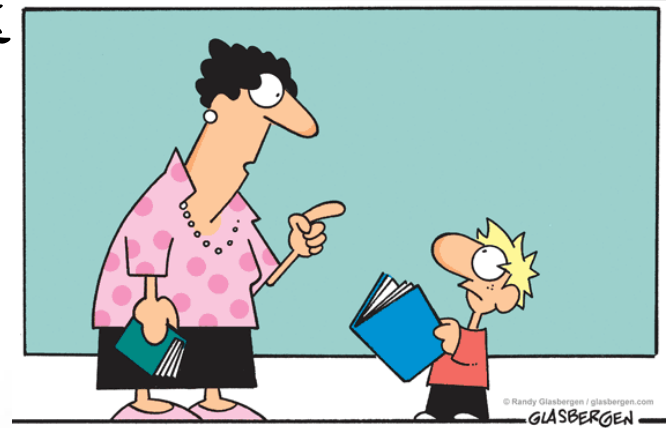
❖ OTHER USEFUL TIPS

- **略讀時挑每一段的第一句(Topic Sentence)與最後一句(Concluding Sentence)**
- **一句讀到底，不要間斷**
- **如上所述，對每一段都做略讀後，即能對全文有一蓋括的了解**
- **每一章的最前面(也許在第一節前，或只是幾個paragraphs)通常會有可了解整章大致內容及與前一章相互關連性的說明**
- **留意轉折連接詞(but, if, however, nevertheless, ...)、介係詞(on, at, in, of, ...)、與關係詞(which, that, whose, ...)等引導的子句，通常緊跟著這些詞後面的文句是觀念所在**



❖ OTHER USEFUL TIPS

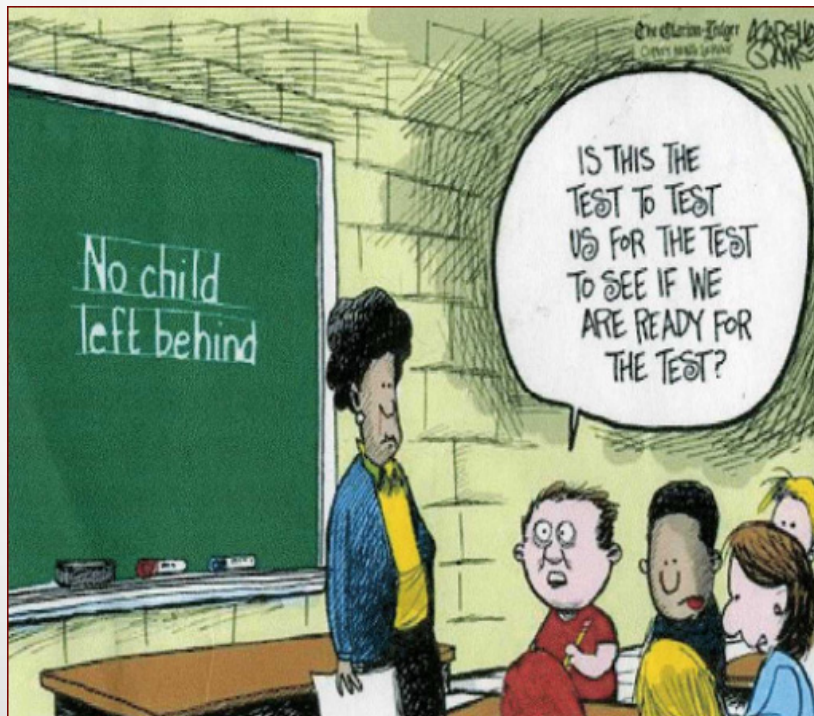
- **詳讀理工學科原文書(they are all plain English, most of the time)時應特別留意:**
 - ✓ 假設條件 (assume, suppose that, if, ...)
 - ✓ 推理(導)過程的轉折處
 - ✓ 結果的物理意義與適用時機
- **略讀時無需查生字，除非該生字影響對整句的理解**
- **精讀時還是應將生字一一查出**
 - ✓ 電子辭典查閱或網路已十分方便快捷
 - ✓ 透過閱讀文章或課文，來熟悉生字
 - ✓ 隨著單字量的增加，花在查生字的时间將越少
- **中譯本??想都別想!**



"It's called 'reading'. It's how people install new software into their brains"

❖ OTHER USEFUL TIPS (Cont'd)

- **生字與文法是培養說(Spoken)與寫(Writing)的基礎!**
- **語言的使用是一種習慣，*If you don't use it, you lose it!***
 - ✓ 熟悉它後，自然無需翻譯成中文，自然讀過去就能懂
 - ✓ 我們讀中文時無需再在腦中翻譯一遍吧？



❖ CONCLUSION



大家加油!!