Linguistics 210

Introduction to
Linguistic Analysis

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Part 2

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Linguistics 210

# Coursepack Part 2

## *Contents*

# Syntax Topics

1. Syntax and morphology are the two parts of ***grammar***.
   - ***Morphology*** deals with the **internal** economy of the word.
   - ***Syntax*** deals with the **external** economy of the word.

2. Words are ***constituents*** of larger groups, called ***phrases***, which may aggregate into larger phrases, and eventually into a different kind of constituent, called a ***clause***.

3. The difference between a phrase and a clause is that a phrase is focussed on one kind of word: a ***noun phrase*** (NP) is an elaboration of a noun, a ***verb phrase*** (VP) of a verb, etc; while a clause is a relation between two kinds of phrase: VP (Predicate) and NPs (Argument(s) of the Predicate).

4. Every ***sentence*** has at least one clause; many have more. If there are several, only one can be the ***main clause***; the rest are ***subordinate clauses*** of one kind or another.

5. Grammatical ***functions*** expressed in many languages (called ***synthetic*** languages) by morphological ***inflection*** (e.g, tense, mood, voice, etc.) are expressed in English (an ***analytic*** language) by various syntactic ***constructions*** and augmentations, often using sets of special words called ***auxiliaries***, ***particles***, or ***function words***. Such words include ***prepositions***, ***conjunctions***, ***quantifiers***, and ***articles***; sets of them are called ***closed classes***, because they are small and don't borrow new words.

6. The most important kind of word in any sentence is the ***matrix predicate***, which in English can be a ***predicate adjective*** or ***predicate noun*** (with a form of *be* in front of it to receive the tense). The matrix predicate ***governs*** the type and existence of any subject, object, complement, or inflection appearing with it.

7. There are a number of different kinds of sentence. Each has its own kind of ***syntactic structure*** and peculiarities; but each can be related systematically to the others by ***syntactic rules***.
   - Statements, called ***declaratives***.
   - Questions, called ***interrogatives***
   - Orders, called ***imperatives***

8. Two special rules of English apply to all that follows:
   - If there is no auxiliary verb and you need one, use *do*. (**do-*Support***)
   - All forms of *be* are **always** considered to be auxiliaries.]

9. There are several kinds of questions:
   - ***Yes/No questions***, which expect an answer of *yes* or *no*, are formed from statements by the rule of ***Subject-Verb Inversion***, which moves the ***first auxiliary*** to the beginning of the sentence.

- *WH- **questions***, which expect an answer with specific information, are formed from statements by the following rules (in order):
  1) substitute the proper *WH-**word*** for the NP being questioned, and
  2) **if** the *WH*-word is not already at the beginning of the sentence,
     a) form a Yes/No question (see above), and
     b) move the WH-word to the beginning of it. (*WH-**Shift***)
- ***Tag questions***, which are added at the end of statements, reprise the grammatical structure of the statement in the following way:
  1) Copy the first auxiliary to the ***end*** of the statement;
  2) If the statement is affirmative, ***negate*** the copied auxiliary (using a canonical contraction if possible); and vice versa;
  3) Add a pronoun that's ***coreferential*** to the subject of the statement after the (possibly negative) auxiliary.

10. Subordinate clauses must function like some kind of word in a clause; i.e, there are ***Adjective***, ***Noun***, or ***Adverb*** clauses.

11. There are several different kinds of rules that produce all these structures:
    - *insertion* rules
    - *deletion* rules
    - *movement* rules

12. There are structural ***constraints*** on movement rules. Some structures, called ***islands***, impose boundaries to ***extraction*** rules like ***Relative-Clause Formation*** and ***Question-Formation***.

13. *Adjective clauses* are of two kinds:
    - ***Relative clauses*** function as adjectives, must be part of an NP, and must contain a NP that is ***co-referential*** with the NP they modify. A ***relative pronoun*** is substituted for this in the relative clause, and moved to the beginning of the clause, if it's not there already.
    - ***NP complement*** clauses also function as adjectives, and must be part of a NP, but they **don't** contain a coreferential NP, and the noun they modify must be a ***picture noun***, like *story*, *report*, or *picture*, that refers to some conceptual entity with a content that can be expressed by a complement clause.

14. ***Adverb clauses***, like adverbs, may appear in many different places in a sentence, but (also like adverbs), may modify ***either*** the verb ***or*** the entire sentence. They are generally marked at the beginning with a ***subordinating conjunction***, like a preposition for a clause, that indicates the kind, degree, and special nature of their relation to the rest of the clause. Some examples of subordinating conjunctions are *because, before, after, if, since, although, while, when, whenever, as soon as,* and *until*. There are lots more.

15. ***Noun clauses*** are called ***Complements***, and must be the subject or object of some ***matrix predicate***; which governs such things as whether it can be a subject or an object ,and which of the three ***complementizers*** (constructions that mark the beginning of complements in English as being subordinate) can be used with it:
    - **for...to,** the ***infinitive*** complementizer;
    - ***POSS*...-ing,** the ***gerund*** complementizer;
    - **that** ***S,*** the ***finite*** (i.e, inflected) ***clause*** complementizer.

    Each of these can function as subject **or** as object, and in addition, it's possible to form a fourth type of complement that doesn't actually use a complementizer:
    - ***Embedded questions.***

16. Subject Complements do not occur often as subjects in English, because English prefers the first verb early in the sentence; if possible, the second constituent (i.e, word or short phrase) in the sentence. A variety of rules conspire to produce English sentences with this structure:
    - ***Extraposition*** is a rule which moves subject complements to the end of the sentence, leaving a dummy *it* pronoun behind to hold the subject position. Extraposition is governed by the matrix predicate.
    - ***Subject-Raising*** (***Raising*** for short) is a rule which replaces an infinitive complement with just the **subject** of that complement, moving the remainder of the infinitive to the end of the sentence. Raising may occur with **either** subject or object complements; it raises the subject of the complement clause, but the Raised NP of a Subject Complement becomes the Subject of the matrix clause, while Raised NP of an Object Complement becomes the new Object of the matrix clause. In either case, Raising is governed by the matrix predicate.
    - **Tough-*Movement*** is a rule which replaces an infinitive subject complement with just the **object** of that complement, moving the remainder of the infinitive to the end of the sentence. *Tough*-Movement is governed by the matrix predicate.
    - Several types of ***Subject-Verb Inversion*** (like the process that occurs in Yes/No Questions) occur when modificational phrases like adverbs (especially negative ones like *never*) occur at the beginning of the sentence. Subject-Verb Inversion is usually governed by the adverb being preposed.

17. ***Equivalent Noun Phrase Deletion*** (***Equi-NP Deletion***, or just ***Equi*** for short) is a rule which deletes the subject of a non-finite **object** complement (infinitive or gerund) under coreference with a noun in the matrix clause (either the Subject, in simple transitive matrix clauses, or the [Indirect] Object in bitransitive matrix clauses). Sentences with Equi resemble those with Raising; and like Raising, Equi is governed by the matrix predicate. It is easy to confuse Equi with Raising, since they produce similar structures; but they work with different predicates and produce different kinds of sentence.

18. The internal structure of the VP is notably more complex than that of the NP. Besides the possibility of multiply embedded VP's with auxiliary verbs, and of object complements, there are also ***phrasal verbs***, which are themselves complex constituents consisting of a verb and a ***particle***. The rule of ***Particle Shift*** moves the particle to the end of the direct object NP; it is **obligatory** for Pronoun objects, and optional elsewhere.

19. Some verbs (**always** verbs of transfer) are ***bitransitive***, and may have **two** objects: the Direct Object (representing the object transferred) and an ***indirect object*** (representing the receiver of the transfer), which usually takes the preposition *to* in English. The rule of ***Dative Movement*** (also called ***Goal Advancement***) exchanges the order of the direct and the indirect objects, placing the indirect object (without *to*) first.

20. Many other verbs may take a ***Benefactive*** construction, with *for*, that indicates the person benefiting from the action described by the VP. Just in case that person winds up **possessing** the Direct Object as a part of the benefit (a frequent-enough outcome to warrant a provision in the grammar), the benefactive phrase may be treated as if it were an indirect object for the purpose of Dative Movement.

21. ***Passive*** constructions have the effect of changing a transitive clause into an intransitive one (more rarely of changing a bitransitive clause into a transitive one). This is accomplished by changing the grammatical relations among the various NP arguments. The Direct Object of the transitive clause becomes the Subject of the passive clause, displacing the original agent Subject (which is optionally expressed – usually at the end of the sentence – in a prepositional phrase with *by*). The Verb Phrase is changed to reflect this shift, by adding an auxiliary *be* and changing the verb form to Past Participle.

    There is no formal difference between the meaning of a Passive and its corresponding Active sentence; the alternation allows a shift in the ***Figure-Ground Relation*** between Agent and Patient, de-emphasizing the importance of the Agent, which isn't even expressed in the majority of cases.

22. ***Pronouns*** (a closed class) are far more common than nouns (an open class), and are used to keep track of ***Reference***, i.e, what entities are participating in the sentence. Special kinds of pronouns, like ***Reflexives*** (*himself, yourselves*), ***Reciprocals*** (*each other*), ***Demonstratives*** (*this, those*), ***Interrogatives and Relatives*** (*which, who, whether*), ***Indefinites*** (*whatever, one*), etc., have special uses and follow special syntactic rules.

# Malay ~ Indonesian
# (Austronesian)

1. Pisang itu di atas meja itu. 'The banana is on the table.'
2. Banta itu di bawah meja itu. 'The pillow is under the table.'
3. Bambang di dalam rumah itu. 'Bambang is inside the house.'
4. Bambang sudah di rumah. 'Bambang is already home.'
5. Bapak jalan ke Kuala Lumpur. 'Father travels to Kuala Lumpur.'
6. Bapak sudah jalan ke Banda Aceh. 'Father travelled to Banda Aceh.'
7. Bapak mau jalan ke Jakarta. 'Father will travel to Jakarta.'
8. Orang itu datang dari Jakarta. 'The man comes from Jakarta.'
9. Anak itu sudah di antara meja-meja itu. 'The child was between the tables.'
10. Rumah Bambang di bawah gunung itu. 'Bambang's house is under the mountain.'
11. Rumah orang itu di antara gunung-gunung itu.
    'The man's house is between the mountains.'
12. Pisang-pisang Bapak sudah di dalam prahu.
    'Father's bananas were in a boat.'

# Malay ~ Indonesian (Austronesian)

| | |
|---|---|
| 1. Bambang guru. | 'Bambang is a teacher.' |
| 2. Bambang sakit. | 'Bambang is ill.' |
| 3. Guru itu sakit. | 'The teacher is ill.' |
| 4. Guru itu sudah sakit. | 'The teacher was ill.' |
| 5. Empat orang guru sudah sakit. | 'Four teachers were ill.' |
| 6. Pisang-pisang kuning. | 'Bananas are yellow.' |
| 7. Pisang-pisang tidak putih. | 'Bananas are not white.' |
| 8. Pisang-pisang bukan putih. | 'Bananas are not white.' |
| 9. Buah itu pisang. | 'That fruit's a banana. |
| 10. Buah itu bukan pisang. | 'That fruit's not a banana. |
| 11. Bambang harus pergi. | 'Bambang has to leave.' |
| 12. Bambang tidak harus pergi. | 'Bambang doesn't have to leave.' |
| 13. Bambang harus tidak pergi. | 'Bambang must not leave.' |
| 14. Bambang belum harus pergi. | 'Bambang doesn't have to leave yet.' |
| 15. Bambang harus belum pergi. | 'Bambang must not leave yet.' |
| 16. Bambang bukan doktor. | 'Bambang is not a doctor.' |
| 17. Bambang tidak sakit. | 'Bambang is not ill.' |
| 18. Bambang bukan sakit. | 'Bambang is not ill.' |
| 19. Bambang belum doktor. | 'Bambang is not a doctor yet.' |
| 20. Bambang belum sakit. | 'Bambang is not ill yet.' |
| 21. Ada doktor di klinik itu. | 'There's a doctor at the clinic.' |
| 22. Ada tiga orang doktor di kelinik itu. | 'There are three doctors at the clinic.' |
| 23. Tidak ada doktor di kelinik itu. | 'There's no doctor at the clinic.' |
| 24. Tidak ada tiga orang doktor di kelinik itu. | 'There aren't three doctors at the clinic.' |
| 25. Belum ada doktor di klinik itu. | 'There's no doctor at the clinic yet.' |

# Malay ~ Indonesian (Austronesian)

| | | |
|---|---|---|
| 1. | Bambang guru. | 'Bambang is a teacher.' |
| 2. | Bambang sakit. | 'Bambang is ill.' |
| 3. | Guru itu tidak sakit. | 'The teacher is not ill.' |
| 4. | Rumah guru itu sedang terbakar. | 'The teacher's house is on fire.' |
| 5. | Rumah guru itu sudah terbakar. | 'The teacher's house burnt down.' |
| 6. | Rumah Bambang itu tidak besar. | 'Bambang's house is not large.' |
| 7. | Bambang melihat rumah guru itu | 'Bambang sees the teacher's house.' |
| 8. | Ali tidak sudah makan. | 'Ali didn't eat.' |
| 9. | Ali sedang makan. | 'Ali is eating.' |
| 10. | Ali mau memakankan anak itu. | 'Ali is going to feed the child.' |
| 11. | Ali mau membesarkan rumah itu. | 'Ali is going to expand the house.' |
| 12. | Guru itu sudah membeli rumah Ali. | 'The teacher bought Ali's house.' |
| 13. | Rumah Ali sudah dibeli seorang guru. | 'A teacher bought Ali's house.' |

14. Rumah bapak orang itu di antara gunung-gunung.
'The man's father's house is between mountains.'
15. Pisang-pisang manis Bapak itu sudah di dalam prahu.
'Father's sweet bananas are already in a boat.'
16. Pisang-pisang yang dibakar Bambang itu tidak manis sekali.
'The bananas that Bambang roasted are not very sweet.'
17. Bambang sudah membakar pisang-pisang yang di atas meja itu.
'Bambang roasted the bananas that are on the table.'
18. Pisang-pisang manis itu di atas meja.
'The sweet bananas are on the table.'
19. Ali boleh melihat rumah yang sedang terbakar itu
'Ali can see the house that's on fire.'
20. Ali boleh melihat rumah yang sudah terbakar itu.
'Ali can see the house that burnt down.'
21. Ali ingin melihati rumah guru yang sudah terbakar itu.
'Ali wants to inspect the house of the teacher that burnt down.'
22. Guru yang melihat Ali itu bapak Bambang.
'The teacher that saw Ali is Bambang's father.
23. Bapak Bambang membeli rumah yang dilihat Ali itu.
'Bambang's father bought the house Ali looked at.'
24. Orang yang membakari rumah Ali itu bukan guru.
'The person who burned Ali's house down is not a teacher.'
25. Rumah yang dilihati Ali itu sedang terbakar.
'The house that Ali inspected is on fire.'

# Acehnese (Austronesian)

1. Gopnyan ka geu-brébu aneuk nyan ..... He (polite) fed that child.
2. Jih ji-brébu aneuk nyan ..... He (familiar) feeds that child.
3. Lón ka lón-brébu aneuk nyan ..... I fed that child.
4. Lón lón-nging aneuk nyan ..... I see that child.
5. Gopnyan geu-nging aneuk nyan ..... He (pol) sees that child.
6. Jih ka ji-nging aneuk nyan ..... He (fam) saw that child.
7. Aneuk nyan ka geu-brébu lé gopnyan ..... That child was fed by him (pol).
8. Aneuk nyan ka ji-brébu lé jih ..... That child was fed by him (fam).
9. Aneuk nyan ka lón-brébu lé lón ..... That child was fed by me.
10. Aneuk nyan ka lón-nging lé lón ..... That child was seen by me.
11. Aneuk nyan ka geu-nging lé gopnyan ..... That child was seen by him (pol).
12. Aneuk nyan ka ji-nging lé jih ..... That child was seen by him (fam).

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Notes: /eu/=[ɨ], /é/=[e], /e/=[ɛ], /ó/=[o], /o/=[ɔ], /ng/=[ŋ], /j/=[ǰ], final /k/=[ʔ]

Acehnese has a system of verb markers that agree with important nouns in the sentence. It also has several types of sentence construction; there are two in this exercise, translated by English Active and Passive (the meanings of these constructions aren't really captured well by the English, but never mind).

1) There are three pronouns in this data. List them and identify the verb agreement marker that corresponds to each one.

2) How is the past tense marked?

3) Describe the normal word order in both types of sentence, and state a rule (in words, not in formalism) that derives one type of sentence from the other (don't forget to describe agreement in stating the rule).

# German (Indo-European)

1. Der Lehrer sieht den Student. 'The [masc] teacher sees the [masc] student.'
2. Der Lehrer sieht die Studentin. 'The [m] teacher sees the [fem] student.'
3. Der Student sieht den Lehrer. 'The [m] student sees the [m] teacher.'
4. Die Studentin sieht den Lehrer. 'The [f] student sees the [m] teacher.'
5. Die Lehrerin sieht die Studentin. 'The [f] teacher sees the [f] student.'
6. Der Lehrer hilft dem Student. 'The [m] teacher helps the [m] student.'
7. Der Lehrer hilft der Studentin. 'The [m] teacher helps the [f] student.'
8. Der Lehrer hilft der Lehrerin 'The [m] teacher helps the [f] teacher.'
9. Die Lehrerin hilft dem Lehrer 'The [f] teacher helps the [m] teacher.'
10. Die Lehrerin hat dem Lehrer geholfen.
    'The [f] teacher helped the [m] teacher.'
11. Der Student hat der Studentin geholfen.
    'The [m] student helped the [f] student '
12. Der Lehrer hat den Student gesehen.
    'The [m] teacher saw the [m] student.'
13. Die Lehrerin hat die Studentin gesehen.
    'The [f] teacher saw the [f] student '
14. Die Lehrerin wird von dem Lehrer gesehen.
    'The [f] teacher is seen by the [m] teacher.'
15. Die Studentin wird von der Lehrerin gesehen.
    'The [f] student is seen by the [f] teacher '
16. Dem Lehrer wird vom Student geholfen.
    'The [m] teacher is helped by the [m] student.'
17. Der Studentin wird von der Lehrerin geholfen.
    'The [f] student is helped by the [f] teacher '
18. Die Studentin ist von der Lehrerin gesehen worden.
    'The [f] student was seen by the [f] teacher '
19. Dem Lehrer ist von der Lehrerin geholfen worden.
    'The [m] teacher was helped by the [f] teacher.'
20. Der Studentin ist vom Student geholfen worden.
    'The [f] student was helped by the [m] student.'

# Basque (Isolate)

Account for the relationship between sentences with main clauses and sentences with relative clauses in Basque

Main clauses

1) gizona ona da
   the man is good
2) sagarrak ontuak dira
   the apples are ripe
3) anderea serora da
   the lady is a nun
4) gizona zuhaitza da
   the man is mean
5) semea apheza du
   his son is a priest
6) liburu hau gurea da
   the book is ours
7) semea handia da
   his son is tall
8) arreba abogadu du
   his sister is a lawyer

Relative clauses

1) ona den gizona
   the man who is good
2) ontuak diren sagarrak
   the apples that are ripe
3) serora den anderea
   the lady who is a nun
4) zuhaitza den gizona
   the man who is mean
5) semea apheza duen aita
   the father whose son is a priest
6) jau gurea den liburu
   the bok that is ours
7) handia den semea
   the son who is tall
8) arreba abogadu duena mutiko
   the boy whose sister is a lawyer

# English *wh*- Questions

1) The director presented the report at the meeting this morning.
2) Did the director present the report at the meeting this morning?
3) Who presented the report at the meeting this morning?
4) What did the director present at the meeting this morning?
5) Where did the director present the report this morning?
6) When did the director present the report at the meeting?
7) What did the director do this morning?
8) What did the director do at the meeting?
9) What did the director do with the report?
10) He sliced the salami with a cleaver because the knife was dirty.
11) Who sliced the salami?
12) Why did he slice the salami with a cleaver?
13) How did he slice the salami?
14) *How he sliced the salami?
15) What did he slice the salami with?
16) What did he slice with a cleaver?
17) What did he slice?
18) What did he do with/?to the cleaver?
19) What did he do with/to the salami?
20) What did he do?
21) *What he did?
22) Why did he do that?
23) *Why did he do?
24) I know how he sliced the salami.
25) *I know how did he slice the salami.
26) I know who sliced the salami.
27) I know what he did.
28) *I know what did he do.
29) I know why he did that.
30) I know why he did.
31) I know why.
32) I know.
33) He told me what the director did this morning.
34) Why he sliced the salami with the cleaver is obvious.
35) It's obvious why he sliced the salami with the cleaver.
36) When the director presented the report is not yet clear.
37) It's not yet clear when the director presented the report.
38) *It's not yet clear when did the director present the report.

# Ergativity

V $NP_1$ **Intransitive** sentence (only **1** noun phrase)

*The dog walked. The door opened. Bill is asleep. Mary is a doctor.*

V $NP_1$ $NP_2$ **Transitive** sentence (**2** noun phrases)

*The man walked the dog. Bill opened the door. She read three books.*

V $NP_1$ $NP_2$ $NP_3$ **Bitransitive** sentence (**3** noun phrases)

*I sent Mary the book. Mary gave Bill a cold. We elected Tom chairman.*

| **Accusative System** | **Ergative System** |
|---|---|
| The dog-NOM walked. | The dog-ABS walked. |
| The man-NOM walked the dog-ACC. | The man-ERG walked the dog-ABS. |
| The door-NOM opened. | The door-ABS opened. |
| The man-NOM opened the door-ACC. | The man-ERG opened the door-ABS. |

**Ergativity even in English**

a) &They objected to the shooting of the hunters. (& = ambiguous)

= (1) ... the fact that somebody shot the hunters. (**Transitive** *shoot*)

= (2) ... the fact that the hunters shot. (**Intransitive** *shoot*)

In choosing the prepositional object to appear with *of* in an *-ing* nominalization phrase (e.g, *the* V-*ing of* NP), V chooses its Absolutive – i.e, a Transitive V chooses its Direct Object, while an Intransitive V chooses its Subject.

b) The *-ee* suffix.

| | | | |
|---|---|---|---|
| Bill has retired | → | Bill is a *retiree.* | **Intransitives** |
| Bill has escaped. | → | Bill is an *escapee.* | |
| Bill is standing. | → | Bill is a *standee.* | |
| They employ Mary | → | Mary is an *employee.* | **Transitives** |
| They inducted Mary. | → | Mary is an *inductee.* | |
| They appointed Mary. | → | Mary is an *appointee.* | |

Adding the suffix *-ee* to a verb produces a label for a person who is the Absolutive of the verb – i.e, a person who is the Direct Object of a Transitive verb, or the Subject of an Intransitive verb.

# Pitjantjara (Pama-Nyungan) 1

1. ţilkamaţalu piţi ţawaṇu.....The echidna dug a hole.
2. papalu ţilkamaţa ñaŋu.....The dog saw the echidna.
3. ñiŋŋilu ţilkamaţa waţaṇu.....The snake told the echidna.
4. papalu maŋŋu paḷanu.....The dog made a nest.
5. ţilkamaţalu papa wanaṇu.....The echidna followed the dog.
6. ñiŋŋilu yapu pataṇu.....The snake dropped a stone.
7. papalu yapu ñaŋu.....The dog saw the stone.
8. papalu ñiŋŋi kulinu.....The dog heard the snake.
9. ţilkamaţalu papa kultuṇu.....The echidna pricked the dog.
10. papalu ñiŋŋi paţaṇu.....The dog bit the snake.
11. ñiŋŋilu ţilkamaţa ŋuḷuṇu.....The snake frightened the echidna.
12. yapulu papa yiluṇţanu.....The stone killed the dog.
13. papa paṇaŋka ñinaŋu.....The dog sat on the ground.
14. ţilkamaţa ŋaḷakulpaŋu.....The echidna returned.
15. ñiŋŋi mapiţaŋu.....The snake went away.

# Pitjantjara (Pama-Nyungan)

1. watiŋku kuḷpirpa ŋaḷakatiŋu.....The man brought the kangaroo.
2. ţiţi ŋuraŋka ñinaŋu.....The child sat in camp.
3. papa paṇaŋka ñinaŋu.....The dog sat on the ground.
4. papaŋku ţiţi paţaṇu.....The dog bit the child.
5. ţiţi yulaŋu.....The child cried.
6. ŋayulu ţiţi kulinu.....I heard the child.
7. watiŋku ŋura wantiŋu.....The man left the camp.
8. watiŋku kuḷpirpa kuḷţuṇu.....The man speared the kangaroo.
9. kuḷpirtu wati pirinu.....The kangaroo scratched the man.
10. yuṇţaltu ţiţi manţinu.....The daughter picked up the child.
11. miñma ŋaḷakulpaŋu.....The woman returned.
12. miñmaŋku ŋayuña ñaŋu.....The woman saw me.
13. ŋayulu miñma waţaṇu.....I told the woman.
14. ŋayulu mirpaṇariŋu.....I became angry.
15. ñura ŋayuña ñaŋu.....You saw me.
16. miñmaŋku ñuraña ñaŋu.....The woman saw you.
17. yuṇţalpa ŋaḷapiţaŋu.....The daughter came.
18. kuḷpirpa iluriŋu.....The kangaroo died.
19. miñma mapiţaŋu.....The woman went away.
20. ŋayulu ţiţi makatiŋu.....I carried the child away.
21. ṇuṇulu ŋayuña ñaŋu.....Nunu saw me.
22. paluṛu wati waţaṇu.....He told the man.
23. watiŋku paluña kulinu.....The man heard him.
24. watiŋku ampinŋa yaḷţiŋu.....The man called Ampin.
25. ampinŋa pakaṇu.....Ampin got up.
26. paluṛu mapiţaŋu.....He went away.

# Pitjantjara (Pama-Nyungan)

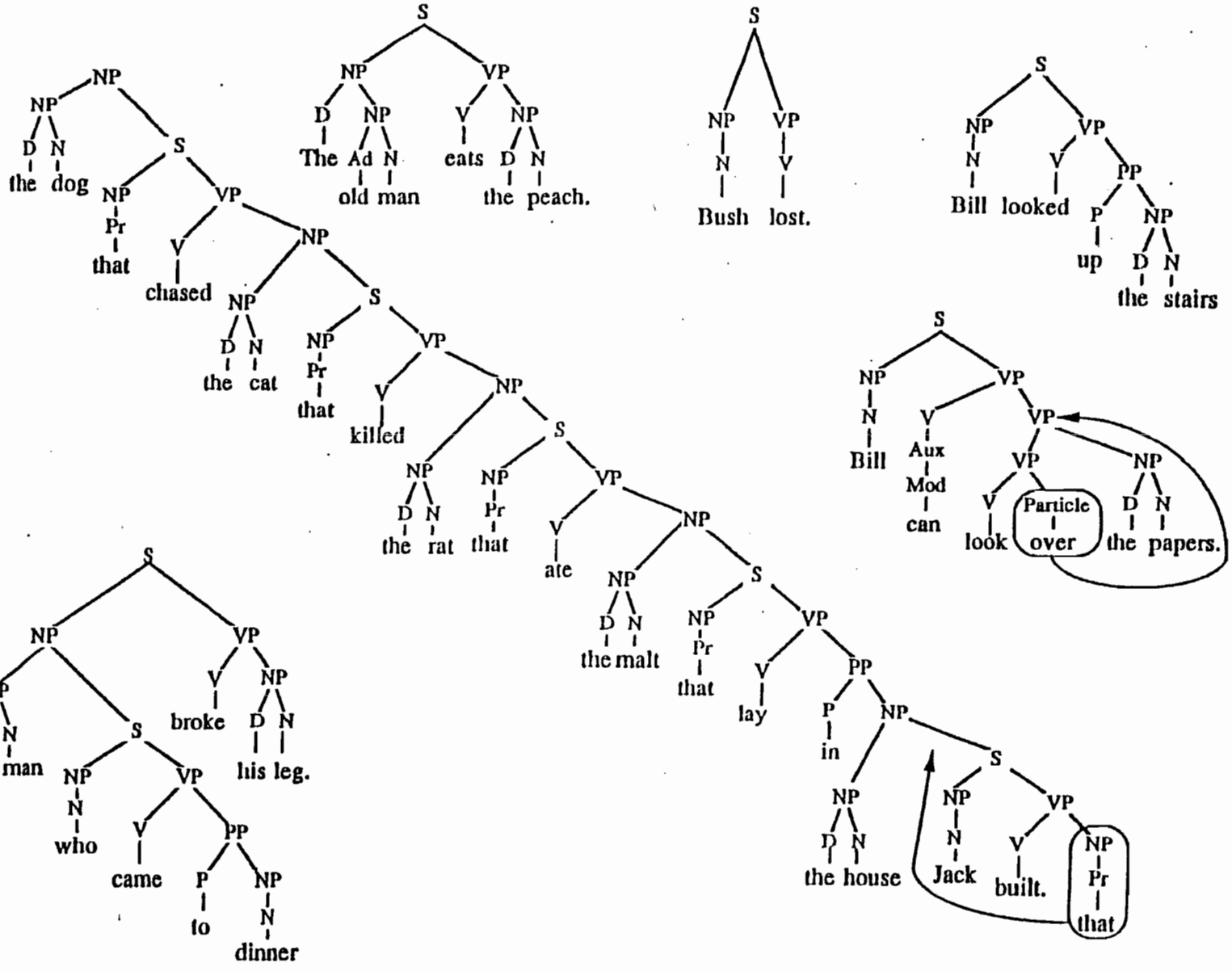
27. ñura ŋaḻapiṯaŋu ..... You came.
28. ampintu ñuraña ñaŋu ..... Ampin saw you.
29. ŋanaṇa ñinakatiŋu ..... We (pl) sat down.
30. ŋanaṇa yuṇṭalpa yaḻṭiŋu ..... We (pl) called the daughter.
31. ŋali yuṇṭalpa ṯapinu ..... We (2) asked the daughter.
32. watiŋku ŋanaṇaña wanaṇu ..... The man followed us (pl).
33. ampintu ŋaliña yaḻṭiŋu ..... Ampin called us (2).
34. ñuramuka ṯiṯi kulinu ..... You (pl) heard the child.
35. pililu ñuramukaña ñaŋu ..... Pili saw you (pl).
36. ṯana ṯiṯi makatiŋu ..... They (pl) carried the child away.
37. ṯiṯiŋku ṯanaña pirinu ..... The child scratched them (pl).
38. ṯana ṯiṯiŋka ñinaŋu ..... They (pl) sat on the child.
39. ṯana pakaṇu ..... They (pl) got up.
40. piliña mirpaṇariŋu ..... Pili was angry.
41. watiŋku piliña puŋu ..... The man hit Pili.

Answer all of the following and cite **examples** to prove your points:

A) Describe the transitive and intransitive constructions.

B) Describe the pattern(s) of noun phrase marking in transitive and intransitive constructions. How many markers are there, and what are they used for? Are there any special lexical classes — i.e, are there any sets of nouns that seem to get special treatment, for which we need different rules?

C) Give paradigms for the personal pronouns, and compare their marking pattern with that of nouns.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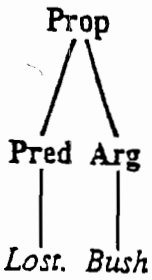
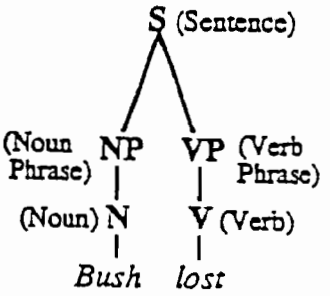
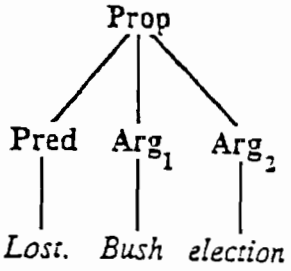
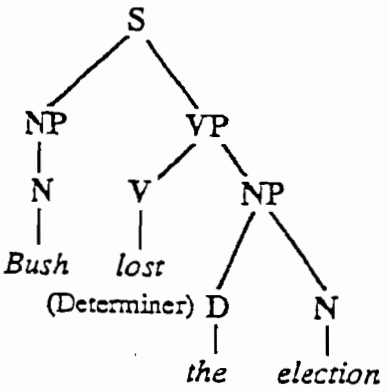
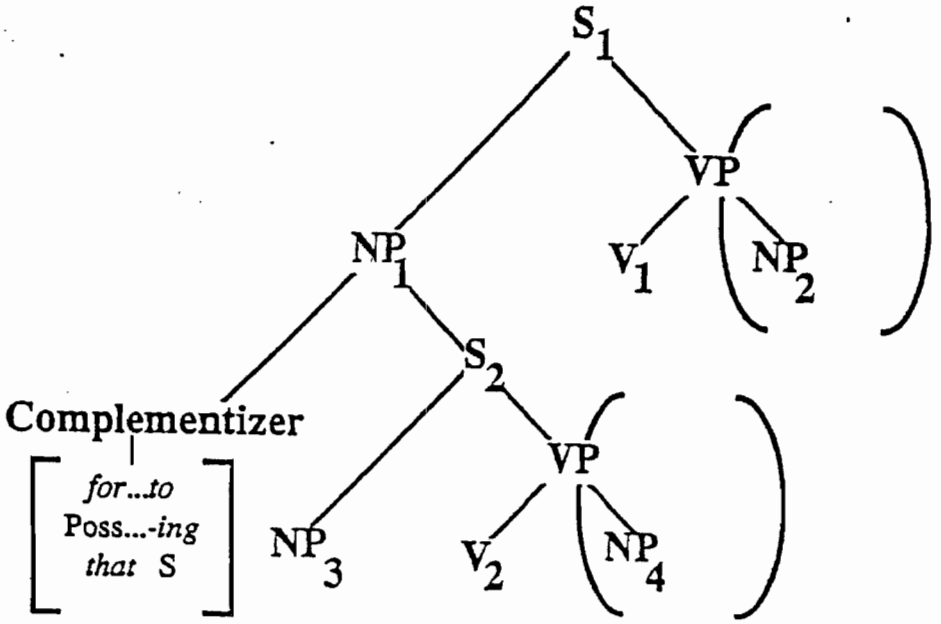
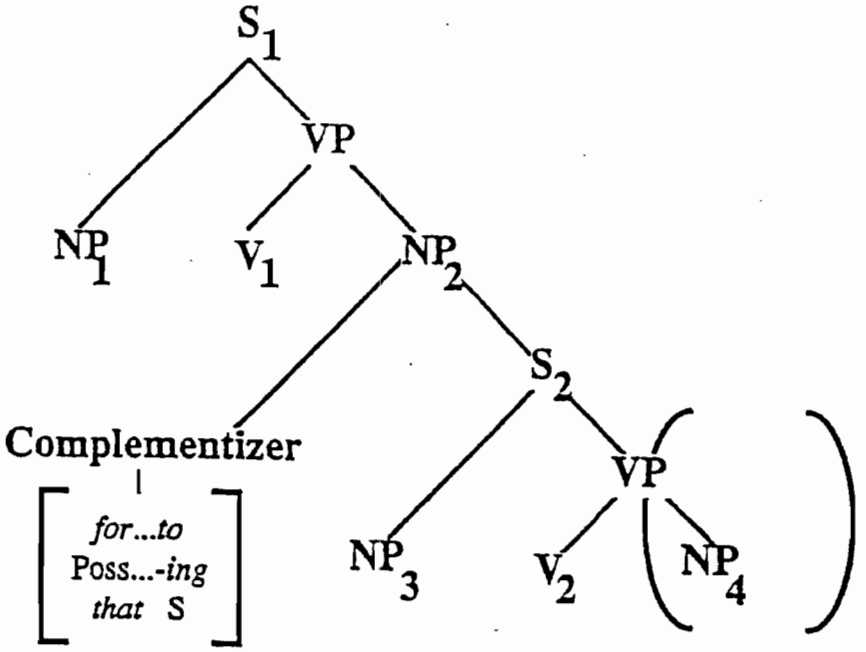
| *Logical Formula:.* | *Logical Tree Structure:* | *Syntactic Tree Structure:* |
|---|---|---|
| *Lost. (Bush)*<br>**Pred (Arg)** |  |  |
| *Lost.(Bush, election)*<br>**Pred ($Arg_1$, $Arg_2$)** |  |  |




Subject Complement Structure




Object Complement Structure

# Syntax Quiz Study Sheet

Draw tree structures for each of the following sentences.
Circle all **modal auxiliary verbs.**

1)a **Bill has run over the dog.**

b Indicate by an arrow in this tree what the relation of this sentence is to **Bill has run the dog over.**

2)a **The woman who will cook our dinner is my mother.**

3) **Frank will be leaving for Chicago.**

Logic is to language and meaning as mathematics is to physical science. In order to understand how sentences – which are what compose language – work, it is necessary to learn to find their logical structure. This doesn't tell us everything about the sentence, but it **does** provide a skeleton on which the other parts of the sentence can be fleshed out, the same way $E=MC^2$ doesn't tell you **how** matter converts into energy, just that it does.

Luckily, logic is much, much simpler to learn than other varieties of mathematics. For one thing, numbers and arithmetic play no role whatsoever in logic. Logic is all about relationships between chunks of meaning, which are called ***Propositions***. Propositions are composed of ***Predicates*** and ***Arguments***. Roughly speaking, **Propositions** are the skeletons of **sentences**; **Predicates** are the skeletons of **verbs** (or **adjectives**), and **Arguments** are the skeletons of **nouns** (or **pronouns**). Almost everything else in a sentence is pretty much ignored in logic; it's only interested in the skeletal parts.

The way you use logic in grammar is to take a sentence and dissect it into its logical skeleton. For instance, *Bill ran* is a very simple sentence, with only one verb and one noun. It corresponds to the Proposition RUN (BILL). (We use SMALL CAPS to represent logical formulae, to distinguish them from actual chunks of language, which are *italicized*.) Notice that the verb in the sentence *Bill ran* is in the past tense, but the Predicate in RUN (BILL) is not; logic normally ignores tense, so this is also the skeleton of *Bill runs*.

Also notice that the Predicate RUN comes first, followed by the Argument BILL, in parentheses, even though the words *Bill* and *ran* occur in the opposite order in the sentence. This is **always** the order in a Proposition, no matter where words occur in the actual sentence; the Predicate comes first, followed by its Argument (or Arguments – there can be up to three, separated by commas), in parentheses.

Let's try another sentence: *Bill kicked the ball*. The corresponding Proposition is KICK (BILL, BALL). By convention, the first Argument inside the parentheses is the ***Subject*** of the sentence (in English, all sentences must have a Subject, and it's prototypically the ***Agent*** of the action denoted by the verb); the next Argument, if there is one, is the ***Direct Object***. A sentence whose corresponding Proposition has <u>two</u> Arguments is called a ***Transitive*** sentence; a sentence with only <u>one</u> Argument (like *Bill ran*) is called ***Intransitive***.

Notice, once again, that tense is ignored in the Proposition; notice also that the definite article *the* is also ignored. If the Object had been plural *balls* instead of singular *ball*, **that** would have been ignored, too. Logic is only concerned with skeletons and the connections of their parts.

Some Predicates can take <u>three</u> Arguments; these are called ***Bitransitive***. Most bitransitive Predicates have to do with **transfer** or **movement** of something from one place (or person) to another. For example, *Bill threw the ball to John* is bitransitive, and its corresponding Proposition is THROW (BILL, BALL, JOHN). The three Arguments, in order, are Subject, Direct Object, and ***Indirect Object***; they have, respectively, the roles (meanings) of ***Source***, ***Trajector***, and ***Goal***. Semantically, the Trajector is what moves, and it moves from Source to Goal, usually with energy provided by the Source. Notice that the preposition *to* is ignored here; the Arguments will appear in this order by convention.

And that's **it**. That's how Propositions are formed: ***PREDICATE (ARGUMENTS)***. This is called ***Predicate Calculus***. We will return to Predicate Calculus shortly.

The other part of logic has to do with combinations and elaborations of Propositions, and it's called ***Propositional Calculus***. It's much simpler than Predicate Calculus.

One elaboration of a Proposition is called ***negation*** and consists of using *not*, as in the sentence: *Bill didn't kick the ball.* The corresponding Proposition is ¬ KICK (BILL, BALL). The symbol '¬' is a logical ***truth functor***; it's pronounced simply as 'not'. It can be applied to any Proposition, yielding a new Proposition, with opposite ***Truth Value***.

One of the simplest kinds of combination is a functor called ***conjunction*** and consists of putting *and* between two sentences: *Bill kicked the ball and John caught it.* The corresponding Proposition is KICK (BILL, BALL) ∧ CATCH (JOHN, BALL). The symbol '∧' is the logical *and* truth functor; it is defined in logical terms, and is not to be confused with the English conjunction *and*, though it's pronounced 'and'. It can connect any two Propositions, yielding a new Proposition. Note that the pronoun *it* in this sentence refers to *the ball*, so BALL is the Argument used for *it* in the Proposition; logic has no pronouns, only Arguments. If we were being very, very careful and formal, we'd have to mark both instances of the argument BALL with the same ***referential index*** '*i*' as $\text{BALL}_i$, just to point out that they did in fact refer to the **same** ball.

Another, related, kind of combination is a functor called ***alternation*** and consists of putting *or* between two sentences: *Bill kicked the ball or John kicked the ball.* The corresponding Proposition is KICK (BILL, BALL) ∨ KICK (JOHN, BALL). The symbol '∨' is the logical *or* truth functor; like ∧, it is defined in logical terms and is not at all identical to the English conjunction *or*, but it can combine any two Propositions and yield a new Proposition. Note that this sentence can be shortened to *Bill or John kicked the ball*; the logical statement is the same, either way.

¬, ∧ and ∨ are defined, like all truth functors, in means of ***Truth Tables***. Logic is so simple because it abstracts away from what we think of as meaning and largely ignores it; in logic, there are only **two** possible 'meanings' (also called Truth Values) for **any** Proposition: ***True*** and ***False***. Therefore it is easy to specify precisely the truth values for any combined Proposition, since there is a very limited number of possible combinations. In particular, if ***p*** and ***q*** represent **any** Proposition at all, the Truth Tables for ¬, ∧ and ∨ are:

| ¬ | *p* | *p* | ∧ | *q* | *p* | ∨ | *q* |
|---|---|---|---|---|---|---|---|
| F | T | T | T | T | T | T | T |
| | | T | F | F | T | T | F |
| T | F | F | F | T | F | T | T |
| | | F | F | F | F | F | F |

The first two columns say that if **p** is True, then **¬p** is False, and vice versa. The truth values of the Proposition **¬p** in each line are conventionally put under the functor (here '¬') in a Truth Table. That's all there is for negation, since it only applies to a single Proposition (i.e, it's a ***monadic functor***), and that Proposition has only two possibilities. We say there are only two lines in the Truth Table of ¬.

By contrast, ∧ and ∨ are ***dyadic functors***, combining **two** Propositions each. This means there are 4 possible combinations of T and F for the two Propositions, so there are four lines in their Truth Tables. The top line (where both p and q are True), and the bottom line (where both are False), are identical for ∧ and ∨. In the first case, both ∧ and ∨ are True, while in the last case, they're both False. It is the middle two lines where the difference lies: if **either** p or q is **False**, then p∧q is False; but if **either** p or q is **True**, then p∨q is True. The result is that the Truth Table of ∧ can be summarized (just reading down the values of the column under ∧) as **TFFF**, while the Truth Table of ∨ is **TTTF**.

In fact, this is actually pretty close to our ordinary understanding of what *and* and *or* mean: in order for *p and q* to be True, **both** Propositions have to be True, whereas in order for *p or q* to be True, only **one** needs to be True. (One might note that there is a different use of *or* in English, which represents a different dyadic functor, with the Truth Table **FTTF**, i.e, *p or q* can be False when **both** p **and** q are True; we usually emphasize this sense in English by using *either...or*, as in *Either John or Bill kicked the ball.* This functor is called **exclusive *or*** (or ***disjunction***) and it is important in computer design, where it is symbolized *XOR*. Logic normally does not distinguish between these two functors, and neither will we, unless necessary.)

Since truth functors are defined exclusively in terms of Truth Tables, which amount to permutations of T and F, it follows that there are 4 monadic truth functors ($2^2$=4): **TT**, **TF**, **FF**, and Negation, which is **FT**; except for Negation, the others are all irrelevant. Likewise, there are 16 possible dyadic truth functors ($2^4$=16), ranging from **TTTT** through **FFFF**. Most of these are merely mathematical curiosities, but there are two more dyadic functors besides ∧ and ∨ that are of interest in natural language. Below are the Truth Tables for them:

| *p* | ≡ | *q* | *p* | ⊃ | *q* |
|---|---|---|---|---|---|
| T | T | T | T | T | T |
| T | F | F | T | F | F |
| F | F | T | F | T | T |
| F | T | F | F | T | F |

The first one is ***logical equivalence***, symbolized by '≡'. The Truth Table for ≡ is **TFFT**; i.e, p ≡ q is True whenever p and q are either both True **or** both False. Notice that, under this definition, any Proposition that is always True, like *Two plus three equals five*, is logically equivalent to **all** other Propositions that are always True, like *December 31 is the last day of the year*, or *The moon is not made of green cheese*. While this is far from what we ordinarily mean by 'equivalent', remember that the only meanings allowed in logic are **T** and **F**; this is a logical result.

The second one is ***material implication***, symbolized by '⊃' (called 'horseshoe'). Unlike all the other dyadic functors we've seen so far, implication is not ***symmetric***; i.e, while it doesn't matter what order we write p ≡ q, p ∧ q, or p ∨ q, it **does** matter when we write p ⊃ q. Put logically, p ∧ q is equivalent to q ∧ p [in symbols, **(p ∧ q) ≡ (q ∧ p)**], but p ⊃ q is **not** equivalent to q ⊃ p [in symbols, **¬ ((p ⊃ q) ≡ (q ⊃ p))**]. (Note, parenthetically, how the parentheses pile up fast in logical formulae; we'll return to this a bit later.) The Truth Table for ⊃ is **TFTT**.

⊃ is often glossed as 'if...then' and is the basis of logical accounts of deductive thought, especially syllogisms. The first line of the Truth Table for ⊃ supports this: p ⊃ q is True if both p and q are True. Certainly that's what we mean by saying things like *If Caesar is dead, then he can't come to tea.* We say this is a ***valid inference***, and deductively correct; that's what the T in the Truth Table means. The most direct mode of the syllogism, called ***Modus Ponens***, goes like this: p ⊃ q is True; but p is True; therefore q is True [in symbols, ((p ⊃ q) ∧ p) ⊃ q]. From the correctness of the statement above, and the fact that Caesar is dead, we conclude that indeed he can't come to tea. (Logic is not rocket science)

The second line of the Truth Table says that p ⊃ q is False if p is True but q is False; i.e, if the premise is True but the conclusion is False, the inference is **invalid**. This also tends to support the 'if...then' interpretation of ⊃: we would like to be able to say that *If two plus two equals four, then the Moon is made of green cheese* is **not** a valid inference. So far, so good.

It is the last two lines of the Truth Table for ⊃ that give people the most trouble. They seem to say that *If two plus two equals three, then the Moon is made of green cheese* is True, **and** so is *If two plus two equals three, then the Moon is **not** made of green cheese.* Certainly this is not what anybody means by 'if...then', and it can hardly be said to be good clear thinking. Or can it?

As it turns out, these **are** necessary for correct reasoning. Consider the last line, for instance: the mode of the syllogism called ***Modus Tollens*** goes like this: p ⊃ q is True; but q is False; therefore p is False [in symbols, ((p ⊃ q) ∧ ¬q) ⊃ ¬p); an example is *If he was hungry, he would have eaten. But he didn't eat. Therefore he wasn't hungry.*]. In order for Modus Tollens to work, p ⊃ q has to be True (i.e, a correct inference) when both p and q are False.

Taken together, the last two lines of the Truth Table for ⊃ say that from a False premise, **any** Proposition at all can be correctly deduced; in other words, be **very** careful not to assume False premises. This is what lies at the root of Proof by Contradiction, which starts by assuming some Proposition (p) and then showing that it leads to a contradiction: (p ⊃ q) ∧ (p ⊃ ¬q). The conclusion of this contradiction must then be that p is False (¬p). In other words, the last two lines of the Truth Table for ⊃ allow us to reason from contradictions, and are thus very valuable, if confusing.

Truth Tables can also be used to prove statements that are formed with truth functors. For instance, a theorem of logic called *Reduction of Implication* shows that ⊃ is not in fact necessary, since it's equivalent to a combination of ¬ and ∨. The statement of the theorem is: ((p ⊃ q) ≡ (¬p ∨ q)): in words, "P implies Q is equivalent to Not-P or Q". The truth table has only four lines, since there are only two arguments; here it is with only the values for *p* and *q* filled in – the ***basic state*** of a Truth Table:

| (*p* | ⊃ | *q*) | ≡ | (¬ | *p* | ∨ | *q*) |
|---|---|---|---|---|---|---|---|
| T | T | T | | | T | | T |
| T | F | F | | | T | | F |
| F | T | T | | | F | | T |
| F | T | F | | | F | | F |

The basic state simply distinguishes the four possible combinations of the truth values of *p* and *q*.and thus the four lines of the table; we have added the canonical **TFTT** truth table for ⊃, since it's already been given. So far we don't know what the truth value of the proposition as a whole is; but there are simple rules for finding out. As in algebra, we work from the inside out. Here the 'inside' is the simply negated proposition ¬*p*. So we fill in the truth values for that, which go in the column under the functor ¬.

| (*p* | ⊃ | *q*) | ≡ | (¬ | *p* | ∨ | *q*) |
|---|---|---|---|---|---|---|---|
| T | T | T | | F | T | | T |
| T | F | F | | F | T | | F |
| F | T | T | | T | F | | T |
| F | T | F | | T | F | | F |

Now we can fill in the truth values for the *or*, using the values for ¬*p* instead of *p* and *or*-ing them with the values for *q* to remove the parentheses:

| (*p* | ⊃ | *q*) | ≡ | (¬ | *p* | ∨ | *q*) |
|---|---|---|---|---|---|---|---|
| T | T | T | | F | T | T | T |
| T | F | F | | F | T | F | F |
| F | T | T | | T | F | T | T |
| F | T | F | | T | F | T | F |

Now we have removed all the parentheses; the second column contains the truth values of the left-hand proposition, and the seventh column now contains the truth values of the right-hand proposition. Note that these two columns are identical: **TFTT**. That means that whenever one is true the other is true, and whenever one is false the other is false. That's a definition of logical equivalence; as the final truth table shows, the truth value of the entire theorem, shown in the fourth column, is **TTTT**.

| (*p* | ⊃ | *q*) | ≡ | (¬ | *p* | ∨ | *q*) |
|---|---|---|---|---|---|---|---|
| T | T | T | T | F | T | T | T |
| T | F | F | T | F | T | F | F |
| F | T | T | T | T | F | T | T |
| F | T | F | T | T | F | T | F |

That is, this proposition is true under **all** circumstances, true no matter what its constituent propositions are, true no matter whether **they're** true or false, true of everything, everywhere, and forever. It's ***logically true***. It's been ***proven***. It's a ***theorem***.

It also means that we may substitute '¬p ∨ q' for 'p ⊃ q' whenever we like in any proposition, without changing the truth value (*salva veritate*). There are thousands (actually, a countably infinite number, but we don't have time for all of them) of other theorems that are or can be proven. Proving them is the business of logic, for the most part.

However, since we are not logicians, we have a much simpler task. We need only know (and be able to apply) the truth tables of ¬, ∨, ∧, ⊃, and ≡. In addition, we need to be aware of the following important theorems, and their meaning (some of these are actually ***axioms*** or ***postulates***, instead of theorems; the difference only matters to logicians, since all are logically true). As an exercise, you should test your understanding of each by putting it into reasonably clear English.

- *Law of Contradiction*: ¬(p ∧ ¬p)
- *Law of Excluded Middle*: p ∨ ¬p
- *Double Negative Law*: ¬(¬p) ≡ p
- *Reduction of Equivalence*: (p ≡ q) ≡ ((p ⊃ q) ∧ (q ⊃ p))
- *Reduction of Implication*: (p ⊃ q) ≡ (¬p ∨ q)
- *Disjunctive Syllogism*: ((p ∨ q) ∧¬q) ⊃ p
- *Hypothetical Syllogism*: ((p ⊃ q) ∧ (q ⊃ r)) ⊃ (p ⊃ r)
- *Modus Ponens*: ((p ⊃ q) ∧ p) ⊃ q
- *Modus Tollens*: ((p ⊃ q) ∧ ¬q) ⊃ ¬p
- *Contrapositive Law*: (p ⊃ q) ≡ (¬q ⊃ ¬p)
- *De Morgan's Laws*: ¬(p ∨ q) ≡ (¬p ∧ ¬q)
  ¬(p ∧ q) ≡ (¬p ∨ ¬q)

Now that we have mastered Propositional Calculus (or at least all of it that one needs to know) we can return to Predicate Calculus. While Propositional Calculus is concerned with Propositions (and sentences) as a whole, and therefore studies rules of logic that apply to any Proposition, Predicate Calculus is concerned with the **parts** of Propositions (and sentences): ***Predicates*** and ***Arguments***.

Recall from p.1 that there are three main kinds of Propositions (and sentences) in terms of how many arguments occur with them: the ***Intransitive***, or ***One-place*** predicates, with only one Argument; the ***Transitive***, or ***Two-place*** predicates, with two Arguments; and the ***Bitransitive***, or ***Three-place*** predicates, with three Arguments.
(To this we may add the ***Impersonal***, or ***Zero-place*** predicates, with no Arguments at all, as in *It's raining*, represented logically as RAIN (); this is a special and rather rare case and doesn't feature into logic much, though it's important in English syntax, since English requires every sentence to have a subject, whether or not it represents a Proposition with an Argument.)

[By the way, at this point in the discussion I intend to stop capitalizing the basic terms used in logic and linguistics, on the argument that by now they should be familiar to you. I **will** continue to write new terms in ***bold italics***, and occasionally to ***Capitalize*** them, when they first appear in the text. That is your cue to learn to recognize them when they pop up in the discussion again. Clear? OK, onward.]

Every proposition **must** have a predicate and (except in the case of impersonals) at least one argument, in just the same way every sentence of English (or any other language) must have a verb or an adjective or a noun that ***predicates*** some idea. (Note that '*to predicate*', the verb in bold italics in the preceding sentence, while obviously related to the noun *predicate*, is pronounced differently; the final syllable in the **verb** *predicate* /'prɛdəˌket/ has a secondary stress and is pronounced like *Kate*, while the final syllable in the **noun** *predicate* /'prɛdəkət/ is unstressed and is pronounced like *cut*. The noun *predication* /ˌprɛdə'keʃən/ is derived from the verb and means 'the act of predicating.')

And just what does 'to predicate' **mean**? Well, it's the basic abstraction in a sentence: it's what one says **about** the arguments. So, in *John is tired*, what one predicates of *John* is the state of **being tired**: TIRED (JOHN); *tired* is an adjective, so *be tired* is a ***predicate adjective.*** In *Bill is a doctor*, what one predicates of Bill is the quality of **being a doctor**: DOCTOR (BILL): *doctor* is a noun, so *be a doctor* is a ***predicate noun***. In *John kicked the ball*, what one predicates of *John* and *ball* is the action of **kicking**: KICK (JOHN, BALL); *kick* is a verb, and verbs are the ***prototype*** predicates, so we don't have to call *kick* a 'predicate verb'.

Note that predicate adjectives and predicate nouns, not being prototype predicates, are required by English grammar to have some form of *be* appearing right before them, and that predicate nouns in English require in addition an indefinite article *a* following the *be*. This is a general and quite automatic fact about English grammar, however, and it is ignored by logic since it doesn't contribute to meaning; thus we say that TIRED, DOCTOR, and KICK are the predicates of these propositions, and basically ignore the automatic *be* and *a* in the predicates, the same way we ignored the automatic *the* in *the ball*.

Predication is an **extremely** general concept; it is at the basis of all human language, and is the first significant linguistic concept acquired by most children when they learn their native language. At the 'two-word' stage in 'bottom-up' language acquisition,

when children learn to put together more than one word (eg. *Doggie bye-bye*), what they are in fact learning is predication. What is being predicated of the argument *doggie* in *Doggie bye-bye* is some concept of departure or absence, derived from the behavior label *bye-bye*, and used as a predicate in this proposition. It is an immensely impressive intellectual achievement to take a term that is learned as a vocal accompaniment of a hand gesture and generalize it to a predicate of departure, capable of applying to any argument.

In addition, predication is ***recursive***. That is, one can predicate something of a proposition as a whole, not just a noun. Put another way, propositions can be arguments of other propositions, in much the same way that mathematical functions can be 'composed with' other functions: $y = f(g(x))$. For example, in *Bill wants Mary to leave*, there are two propositions (or ***clauses***), each with its own predicate and its own arguments. One of the propositions (or *clauses*) is ***dependent***, or ***subordinate***, to the other proposition, which is the ***independent***, or ***main***, or ***matrix*** clause. The subordinate clause is *(for) Mary to leave*, and its corresponding proposition is LEAVE (MARY). The main clause **contains** the subordinate clause as an argument (the direct object – what Bill wants – of its predicate *want*); the corresponding proposition is WANT (BILL, LEAVE (MARY)). Note the extra parentheses.

[By the way, there are many other kinds of subordinate clauses; this is just one example. To be precise, this is a ***direct object infinitive complement*** clause, a kind of ***noun clause***.]

This kind of recursion can be carried on indefinitely, leading to arbitrarily long sentences: *Bill said that Mary thought that John intended Bill to say that Mary thought that John intended Bill to say that* ...[SAY (BILL, THINK (MARY, INTEND (JOHN, (SAY (BILL, THINK (MARY, INTEND (JOHN, SAY (BILL, ...)))))))))]. It is very, very common; the majority of English sentences contain one or more subordinate clauses, of which ***complement*** clauses like these are the most important, logically and syntactically.

Arguments, too, can be complicated. Arguments are normally nouns or pronouns, referring to ***entities***, in the same way that predicates refer of ***events*** or ***states***. However, while logic normally ignores articles like *a* and *the* that modify nouns, and normally treats adjectives as predicates even when they modify nouns, there is one additional kind of little word attached to arguments that is crucial to the meaning of sentences and figures prominently in logic. That little chunk of meaning is the ***quantifier***.

It has been known since Aristotle that there were two different kinds of proposition that had different effects in syllogisms. Suppose one considers the difference between *All Hoosiers are right-handed* and *Some Hoosiers are right-handed.* If it is the case that **all** Hoosiers are right-handed, then it follows trivially that **some** of them are. However, the reverse is not true: from the fact that **some** Hoosiers are right-handed, we cannot conclude anything about **all** Hoosiers. The difference is clearly due to the words *all* and *some*, which are examples of quantifiers, a ***syntactic category*** ('Part of Speech') in all languages, and also a form of logical functor (actually, in formal logic, quantifiers are called ***operators***, not functors; once again, the difference is only relevant to a logician). There are many different kinds of quantifier in natural language, but logic uses only two abstract varieties: the ***universal quantifier*** (*each, every, any, all*; symbolized by ∀) and the ***existential quantifier*** (*some, there exists, at least one*; symbolized by ∃).

In formulas, these quantifier symbols are placed at the beginning of the proposition, before the predicate, which in turn comes before the arguments that the quantifiers modify. In order to match up each quantifier with the argument that it ***binds***, one uses ***variable*** symbols (typically $x$ and $y$, just like algebra). Thus *Somebody ate peaches* is symbolized as $(\exists x)$ EAT $(x,$ PEACHES); that is, in some case, there was a person that ate peaches. Likewise, *Everybody ate peaches* is symbolized as $(\forall x)$ EAT $(x,$ PEACHES); that is, in every case, there was a person that ate peaches.

One can be more specific about the universe of discourse of quantifiers; in particular, it is often useful to use ***restricted quantifiers*** with limited reference. For instance, in the examples of the preceding paragraph, it is taken for granted that the argument $x$ that is bound by the quantifiers is restricted to ('quantifies over') **people**. However, this is not a given in logic, and ought to be specified if one is being precise. One way of doing this is to include the restriction in the quantifier statement. Thus instead of the formal statements in the preceding paragraphs, one could say $(\exists x:$ PERSON $(x))$ EAT $(x,$ PEACHES) and $(\forall x:$ PERSON $(x))$ EAT $(x,$ PEACHES) ; that is, in either some or all cases **of persons**, the person ate peaches. If everyone is clear about the presuppositions, this is not necessary, but one should always be prepared to be more specific if necessary, since that is what logic is for.

We say that a quantifier ***binds*** an argument it refers to, or that it ***quantifies over*** cases of such an argument. It is possible to bind more than one argument in a proposition (though each binding requires a different quantifier), and in such a case, we find that the formal notation provides a benefit, disambiguating a potentially ambiguous sentence. Thus, in the sentence *Every boy read some book*, there are two possible readings: either there is some book (say *Moby Dick*) that every boy read, or each boy read a unique book (which might possibly be the same in any two cases, but need not be – Bill read *Moby Dick*, Frank read *Small Gods* and so did Joe, but Mark read *Tropic of Capricorn*).

These two cases are represented by the handy logical fact that if there are two quantifiers in any proposition, they can occur in two possible orders, since they are not part of the arguments they bind. Thus the two cases above are represented as $(\exists y:$ BOOK $(y))$ $(\forall x:$ BOY $(x))$ READ $(x, y)$, and $(\forall x:$ BOY $(x))$ $(\exists y:$ BOOK $(y))$ READ $(x, y)$. That is (respectively), there is some book such that for every boy, that boy read the book; and, for every boy, there is some book such that that boy read the book.

We say, in the first case, that the existential quantifier $\exists$ is ***outside the scope*** of the universal quantifier $\forall$, while the universal is ***inside the scope*** of the existential; or, alternatively, that the existential quantifier has ***wide scope***, while the universal has ***narrow scope***. Reverse 'universal' and 'existential' to describe the second case; either way, the ***scope*** of a quantifier is the relevant technical term. This kind of ambiguity comes about because natural language normally requires quantifiers to modify (and thus appear with) the arguments they bind, which does not always allow scope to be specified. This is called a ***quantifier-crossing*** (or Q-Crossing) ***ambiguity*** in the syntactic trade; in logic, of course, it does not arise because the scope of quantifiers **must** be specified.

Quantifiers may only bind arguments, not predicates. This restriction results in a theory called ***First-Order Quantified Predicate Calculus***. The 'first-order' part means

that quantification is restricted to arguments; if quantification over predicates were allowed, it would be Second Order. The significance here is that first-order quantified predicate calculus has been mathematically proven to be ***consistent***, and thus useful for all kinds of mathematical and engineering purposes, while second-order has been proven to be ***inconsistent***, which means that one can't rely on logical calculi to produce correct results with it. Thus logicians (and mathematicians and engineers) are restricted to first-order calculi. This doesn't mean that human language is, of course; just that logic can only go so far in modelling it.

Similar kinds of ambiguities arise when negatives occur with quantifiers: *All the boys didn't leave* can mean **either** that some left but some didn't, **or** that they all stayed. Respectively, these correspond to $\neg(\forall x\text{: BOY}(x))$ LEAVE $(x)$ or $(\forall x\text{: BOY}(x))\ \neg$LEAVE $(x)$.

That is, it makes a difference where a negative appears with respect to a quantifier. A negative on one side of a quantifier has a different meaning from one on the other side. This ***quantifier-negative*** (or Q-Neg) ***ambiguity*** is in fact a consequence of De Morgan's Laws, which we saw before in terms of the functors $\wedge$ and $\vee$. In fact, the quantifers $\forall$ and $\exists$ have a natural relation to the functors $\wedge$ and $\vee$ (respectively).

$(\exists x)$ refers to **some** $x$: i.e, $x_1$ **or** $x_2$ **or** $x_3$ **or** $x_4$ **or** ...; while $(\forall x)$ refers to **all** $x$: i.e, $x_1$ **and** $x_2$ **and** $x_3$ **and** $x_4$ **and** ... Thus De Morgan's Laws, stated in terms of quantifiers instead of functors, where $P$ represents **any** predicate at all, are: $\neg(\forall x)\ P(x) \equiv (\exists x)\ \neg P(x)$ and $\neg(\exists x)\ P(x) \equiv (\forall x)\ \neg P(x)$. That is, if P is not true **for all** $x$, then **there is some** $x$ such that P is false; while if **there is no** $x$ such that P is true for that $x$, then **for all** $x$, P is false.

Indeed, these are only two of the forms in which De Morgan's Laws (and all the rest of logic) appear. Logic is the basis of all mathematics, including ***set theory***, and also of electronic ***circuit design***. The accompanying illustration shows two more ways to state De Morgan's Laws in these fields. In addition, it shows one further logical variation, called ***modal logic***, which is extremely useful in analyzing natural language.

***Modality*** (or ***mode***, or ***mood***) is a logical or semantic notion that appears, like negation and quantification, in every human language. Indeed, modality is intrinsically linked with negation and quantification, and has many complex interactions with them. The basic ideas behind modality are the concepts of ***possibility*** and ***necessity***. Any word in a sentence that deals with these concepts in any way can be considered a ***modal term*** of some sort, and modal logic may be applied to propositions that contain it. In English, the set of modal terms (or just ***modals***) includes the ***modal auxiliary verbs*** *must, can, could, may, might, shall, should, will, would,* and sometimes *need* and *dare*. It also includes adjectives like *(im)possible, (im)probable,* and *(un)likely*, and adverbs like *maybe, possibly, probably,* and *perhaps*.

Possibility and necessity are inverses of one another in exactly the same way that $\exists$ and $\forall$ are, and that $\vee$ and $\wedge$ are. If some proposition is **necessarily true**, then it is **not possible** for it to be false; likewise, if it is **possibly true**, then it is **not necessary** for it to be false. Modal logic uses the symbol $\Box$ (square) for **necessary**, and the symbol $\Diamond$ (diamond) for **possible**. Thus, for any proposition $p$, $\Box$p means 'p is necessarily true' or just 'p is necessary', while $\Diamond$p means 'p is possibly true' or just 'p is possible'.

De Morgan's Laws in modal logic use the reciprocal definitions of □ and ◊: $\Diamond p \equiv \neg\Box\neg p$, and $\Box p \equiv \neg\Diamond\neg p$; or (respectively) if p is **possible**, then it **not necessarily false**, and if p is **necessary**, then it is **not possibly false**. Possibility, looked at this way, means that p is true in **some** set of circumstances, while necessity means that p is true in **all** sets of circumstances. In other words, in the correct context, □ is equivalent to ∀ (and thus ∧), while ◊ is equivalent to ∃ (and thus ∨). So □ and ◊ commute under negation in exactly the same way ∀ and ∃ do, which is exactly the same way ∧ and ∨ do.

$\neg\Box p \equiv \Diamond\neg p$ $\quad$ $\neg(\forall x)\, P(x) \equiv (\exists x)\neg P(x)$ $\quad$ $\neg(p \wedge q) \equiv (\neg p \vee \neg q)$

$\neg\Diamond p \equiv \Box\neg p$ $\quad$ $\neg(\exists x)\, P(x) \equiv (\forall x)\neg P(x)$ $\quad$ $\neg(p \vee q) \equiv (\neg p \wedge \neg q)$

Recall that in many sentences the corresponding propositions have a large number of parentheses. For instance, a rather ordinary sentence like *Bill wants to begin to learn to speak Spanish* has the awkward associated proposition WANT (BILL, BEGIN (BILL, LEARN (BILL, SPEAK (BILL, SPANISH)))). This kind of detail makes a notation system too cumbersome to be of any use; if one is always having to match parentheses, there is no attention left to the novel conclusions that a calculus is supposed to produce. There are two different ways to solve this problem. Logic takes one and linguistics the other.

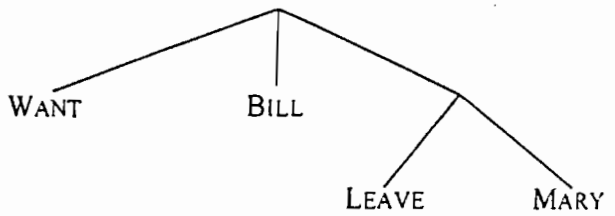
The logical solution is to do away with parentheses entirely, replacing them with a ***prefixal*** notation. Thus, instead of putting the functor ∨ **between** p and q, as p∨q, one might put it **before** them, as ∨pq. This is often called ***Polish notation*** or ***PN***, since it was originated by the Polish logican Jan Łukasiewicz (1878-1956), and most English speakers can neither spell nor pronounce his name (/wu'kazevitc/). A variant is ***reverse Polish notation*** or ***RPN***, often used in programming languages (or Hewlett-Packard calculators), in which the functors (or in HP calculators, the arithmetic operation) is suffixal, following the arguments, as pq∨. PN and RPN are completely equivalent, and either may easily be translated into the other. PN is still the most common logical variety.

In PN, each functor or operator is given a different letter (always upper-case, occasionally Greek) and its arguments are expressed in lower-case letters. PN formulas are read left-to-right, and no expression is complete until **all** its arguments are **completely** expressed. Thus no parentheses are needed. In Łukasiewicz notation, ¬p is **Np** (*N* for *Negativ* – Łukasiewicz was writing in German); p∧q is **Kpq** (*K* for *Konjunction*); p∨q is **Apq** (*A* for *Alternation*); p⊃q is **Cpq** (*C* is a mnemonic for ⊃); p≡q is **Epq**; ◊p is **Mp** (*M* for *Möglich*); □p is **Lp** (*L* for *Logisch*); (∀*x*) is **Px**; (∃*x*) is **Sx**. Some equivalences are shown on the accompanying illustration of De Morgan's Laws. Łukasiewicz notation works exactly the same as 'standard' notation (which is, roughly speaking, the notation used by Whitehead and Russell in their seminal work *Principia Mathematica*) in terms of truth tables and other logical niceties, but – since it does not require parentheses – it is much more machine-washable (since it is easily interpretable using only a simple pushdown stack) and finds much more favor in computational circles. For our purposes it is necessary only to be aware of it and be able if necessary to translate it into standard notation.

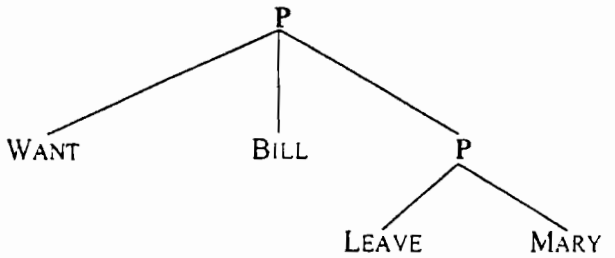
That is the logical solution to the problem of parentheses: change the notation to make the constituents easier to push around. The linguistic solution, on the other hand, is more concerned with making the data more easily accessible than with making the notation simpler, and thus it crucially takes note of the fact that the problem of parentheses

arises from trying to make everything appear on one line. Parentheses are nothing more than a way to represent two dimensions in one. That is, when we use multiple parentheses in WANT (BILL, LEAVE (MARY)), we are noting that the proposition LEAVE (MARY) is contained in (subordinate to, dependent on) the entire proposition (main clause, matrix sentence).

If we treat such predicational subordination as another dimension (say, the **vertical** dimension, which is after all the metaphor suggested by terms like *dependent* and *subordinate*), then we might get rid of the parentheses in WANT (BILL, LEAVE (MARY)) (at the cost of using more paper) by writing it in two dimensions, something like:




This mode of representation is called a ***tree diagram***, though clearly this is metaphorical also, since the 'trees' are upside down. Each node may have a label, producing a ***labelled tree***, which looks like this:




where **P** designates **P**roposition. We could label the **P**redicate and **A**rgument nodes as well, but the convention of putting the predicate to the left makes that unnecessary; in this case, for instance, it is clear that the lower, dependent, subordinate **P** serves as the second argument of the predicate WANT in the higher P; the order is the same as the order in the linear proposition WANT (BILL, LEAVE (MARY)). However, the parentheses and commas that are required to indicate the relations between the parts of the one-dimensional proposition are not needed in the two-dimensional diagram. In a proposition as simple as this, the difference between the two is small, but as the structures grow more complex, it is much easier to see the relationships among the parts of the structure.

Since propositions are logical structures modelling sentences (or clauses), it is common to use *S* instead of *P* to label propositions in such logical tree structures in linguistics. Either way, of course, the ***constituent structure*** of the proposition is made much more clear through such tree diagrams, and parentheses may be dispensed with. Tree diagrams are used, and much more highly elaborated, in grammatical analyses, but they are all based on the simple kind of predicate-and-argument diagram shown here.

There are many more logical details one could talk about, but mastering these is generally enough for anyone interested in English grammar. Attached are some diagrams and exercises covering the concepts discussed here.

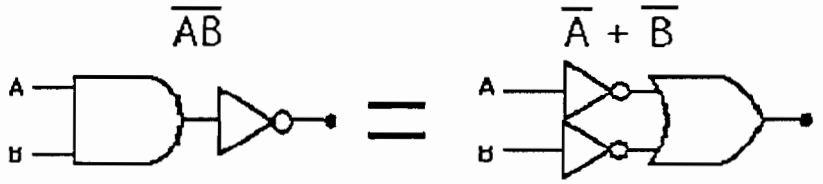
# De Morgan's Laws, as stated in various formal theories and notations

## 1. Set Theory

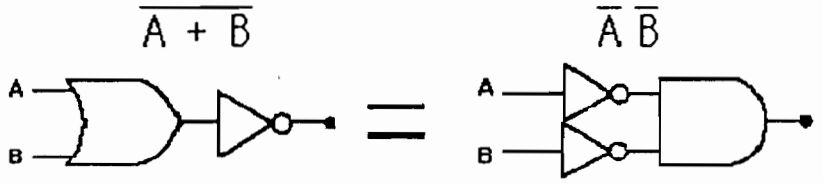
The Complement of the Intersection of any number of sets is Equivalent to the Union of their Complements. $\overline{\bigcap_{j} A_j} \equiv \bigcup_{j} \overline{A_j}$

The Complement of the Union of any number of sets is Equivalent to the Intersection of their Complements. $\overline{\bigcup_{j} A_j} \equiv \bigcap_{j} \overline{A_j}$

## 2. Circuit Diagrams




A NAND gate is equivalent to an inversion followed by an OR




A NOR gate is equivalent to an inversion followed by an AND

## 3. Propositional Calculus

*(Not (p And q))* is Equivalent to *((Not p) Or (Not q))*

| | |
|---|---|
| $\neg(p \wedge q) \equiv (\neg p) \vee (\neg q)$ | 'Standard Notation' (*Principia Mathematica*) |
| ENKpqANpNq | 'Polish Notation' (Łukasiewicz) |

*(Not (p Or q))* is Equivalent to *((Not p) And (Not q))*

| | |
|---|---|
| $\neg(p \vee q) \equiv (\neg p) \wedge (\neg q)$ | *PM* |
| ENApqKNpNq | Łuk |

## 4. Modal Logic

*(p is Not Necessary)* is Equivalent to *(Not p is Possible)*

| | |
|---|---|
| $\neg\Box p \equiv \Diamond \neg p$ | *PM* |
| ENLpMNp | Łuk |

*(p is Not Possible)* is Equivalent to *(Not p is Necessary)*

| | |
|---|---|
| $\neg\Diamond p \equiv \Box \neg p$ | *PM* |
| ENMpLNp | Łuk |

## 5. First-Order Quantified Predicate Calculus

*(Not (For Every x, φ(x)))* is Equivalent to *(For Some x, Not φ(x))*

| | |
|---|---|
| $\neg(\forall x)\ \phi(x) \equiv (\exists x)\ \neg\phi(x)$ | *PM* |
| ENPxϕxSxNϕx | Łuk |

*(Not (For Some x, φ(x)))* is Equivalent to *(For Every x, Not φ(x))*

| | |
|---|---|
| $\neg(\exists x)\ \phi(x) \equiv \forall(x)\ \neg\phi(x)$ | *PM* |
| ENSxϕxPxNϕx | Łuk |

| I. | Grammatical Sentence | Logical Proposition |
|---|---|---|
| 1. | Bill sings. | SING (BILL) |
| 2. | Bill enjoys singing. | ENJOY (BILL, SING (BILL)) |
| 3. | Mary enjoys Bill's singing. | ENJOY (MARY, SING (BILL)) |
| 4. | Bill sings well | GOOD (SING (BILL)) |
| 5. | Mary sees Bill. | SEE (MARY, BILL) |
| 6. | Mary saw Bill. | SEE (MARY, BILL) *or* PAST (SEE (MARY, BILL)) |
| 7. | Bill is tired. | TIRED (BILL) |
| 8. | Bill was tired. | TIRED (BILL) *or* PAST (TIRED (BILL)) |
| 9. | Bill sang a song. | SING (BILL, SONG) *or* ... |
| 10. | Mary thinks that Bill is tired. | THINK (MARY, TIRED (BILL)) |
| 11. | Mary wants to leave. | WANT (MARY, LEAVE (MARY)) |
| 12. | Mary wants Bill to leave. | WANT (MARY, LEAVE (BILL)) |
| 13. | Mary said that Bill was tired. | SAY (MARY, TIRED (BILL)) |
| 14. | Mary told Bill that she was tired. | TELL (MARY, BILL, TIRED (MARY)) |
| 15. | Mary told Bill that he was tired. | TELL (MARY, BILL, TIRED (BILL)) |
| 16. | Mary told Bill to leave. | TELL (MARY, BILL, LEAVE (BILL)) |
| 17. | Mary thought that the man was tired. | PAST (THINK (MARY, TIRED (MAN))) |
| 18. | Mary thinks that Bill left. | THINK (MARY, PAST (LEAVE (BILL))) |
| 19. | Mary said that Bill had left. | PAST (SAY (MARY, PAST (LEAVE (BILL))) |
| 20. | Mary told Frank that Bill had left. | PAST (TELL (MARY, FRANK, PAST (LEAVE (BILL))) |

Above are twenty English sentences with their corresponding propositions expressed in Predicate Calculus. Note the PREDICATE (ARGUMENTS) notation.

Find or create twenty more sentences of approximately equal complexity and give their corresponding propositions. You will have to determine which terms are predicates, and which other terms are their arguments. Note that not all logical arguments are expressed – compare (2) and (3), for instance.

Since logic ignores articles, as well as person, number, and tense, you may do so also whenever it is not relevant to the exposition. For example, in (17-20) tense **is** relevant, and is therefore indicated, but since there is no basic propositional difference between (7) and (8), tense can be profitably ignored.

**Hints:** (a) Don't forget to balance parentheses.
(b) Avoid quantifiers like *all* or *some*; they appear in Exercise 2.

II. Express in both 'Standard' and 'Polish' notation the following propositions. For each, special peculiarities and instructions are appended.

1. *All the boys don't speak Spanish.*
   **NB**: Since this is ambiguous, it will need two expressions, one for each sense.

2. *Bill may not like logic, but he can't ignore it.*
   **NB**: Treat *but* as equivalent to And, and both *may* and *can* as Possible.

3. *If you build it, they will come.*
   **NB**: Ignore tense.

4. *Nobody likes a wise guy.*
   **NB**: Treat *a wise guy* as an existential quantifier,
   e.g, 'Some $x$ such that WISE-GUY ($x$)';
   be careful with the placement of the quantifiers and the negative.

5. *You can fool all of the people some of the time,*
   *and some of the people all of the time.*
   **NB**: Treat *fool* as a 3-place predicate with a time argument,
   e.g, FOOL (YOU, $x$, $t$) means 'You fool $x$ at time $t$'.

6. *'Oh, life is a glorious cycle of song,*
   *A medley of extemporanea;*
   *And love is a thing that can never go wrong,*
   *And I am Marie of Roumania.'*
   — Dorothy Parker (1893-1967)
   **NB**: Treat the predicates as single items (e.g, MARIE-OF-ROUMANIA (I)), and adjacent propositions without conjunctions as if connected by And. Comment on the truth values of the individual conjuncts.

7. *If that answer's correct, then I'm a monkey's uncle.*
   **NB**: Treat the predicates as single items, and comment on the truth value of the proposition as a whole. How does the Contrapositive Law apply here?

8. *He has to be either here or there, but he's not here.*
   **NB**: Treat *but* as And, and comment on the conclusion to be drawn.

9. *Though everybody likes Raymond, not everybody likes his mother.*
   **NB**: Treat *though* as And. Is order of conjoined propositions significant?

10. *Buy today and get 0% interest.*
    **NB**: Expand this sentence by supplying missing arguments before logicizing it; some of them are indefinite, to be supplied by context, and therefore not a problem for logic. Be careful of the *and*: it doesn't really represent logical And, but rather a different functor. Which one? Is this an imperative?

# Some Types of Predicate

| | |
|---|---|
| Factive predicates | *realize, remember, (be) delighted (that S)* |
| Counterfactive predicates | *pretend (to)* |

**Factive** predicates presuppose their complements; **counterfactive** predicates presuppose the **falsity** of their complements. The principal test for presupposition is the negation test. If S presupposes P, then S entails P ($S \Rightarrow P$), and so does $\neg S$, the negation of S ($\neg S \Rightarrow P$).

| | | |
|---|---|---|
| *Bill is pleased that it rained today.* | $\Rightarrow$ | *It rained today.* |
| *Bill is **not** pleased that it rained today.* | $\Rightarrow$ | *It rained today.* |

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| | |
|---|---|
| Implicative predicates | *manage, bother, happen, remember (to V)* |
| Neg-implicative predicates | *fail (to V)* |

**Implicative** predicates entail the **truth** of their complements, and their negations entail the **falsity** of their complements The signs are reversed with **Neg-implicative** predicates:

| | | |
|---|---|---|
| *Bill managed to open the door.* | $\Rightarrow$ | *Bill opened the door.* |
| *Bill didn't manage to open the door.* | $\Rightarrow$ | *Bill didn't open the door.* |
| *Bill failed to open the door.* | $\Rightarrow$ | *Bill didn't open the door.* |
| *Bill didn't fail to open the door.* | $\Rightarrow$ | *Bill opened the door.* |

---

| | |
|---|---|
| *If* predicates | *cause, make, force, persuade (to V)* |
| Neg-*if* predicates | *prevent, dissuade, discourage (from V-ing)* |
| *Only-if* predicates | *can, be able, (be) possible/in the position, have the time/opportunity/chance/foresight/courage (to V)* |

*If* predicates express a **sufficient** condition; *only-if* predicates express a **necessary** condition.
*If* predicates entail the **truth** of their complements, but their negation entails nothing about their complements.
Neg-*if* predicates entail the **falsity** of their complements, but their negation entails nothing about their complements.
*Only-if* predicates entail nothing about their complements, but their negation entails the **falsity** of their complements.

| | | |
|---|---|---|
| *Jim forced Bill to open the door.* | $\Rightarrow$ | *Bill opened the door.* |
| *Jim didn't force Bill to open the door.* | $\not\Rightarrow$ | *Bill opened the door.* |
| *Jim prevented Bill from opening the door.* | $\Rightarrow$ | *Bill didn't open the door.* |
| *Jim didn't prevent Bill from opening the door.* | $\not\Rightarrow$ | *Bill didn't open the door.* |
| *Bill had the courage to open the door.* | $\Rightarrow$ | *Bill opened the door.* |
| *Bill didn't have the courage to open the door.* | $\not\Rightarrow$ | *Bill opened the door.* |

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| | |
|---|---|
| Inchoative predicates | *become/get (Adj), learn, die, ripen, close, open* |
| Causative predicates | *make/get (Adj), teach, kill, ripen, close, open* |

**Inchoative** predicates express a **change of state**, from an action to a state, from a state to an action, or from one state to another. **Causative** predicates express the **cause** of some change. It is common to use the same verb for both causative and inchoative. Causatives typically entail an inchoative representing the change; inchoatives typically entail the end state.

| | | | | |
|---|---|---|---|---|
| *Bill opened the door.* | $\Rightarrow$ | *The door opened.* | $\Rightarrow$ | *The door was open.* |
| *Driving made Bill tired.* | $\Rightarrow$ | *Bill got tired.* | $\Rightarrow$ | *Bill was tired.* |
| *Fran taught Bill to drive a diesel.* | $\Rightarrow$ | *Bill learned to drive a diesel.* | $\Rightarrow$ | *Bill can drive a diesel.* |
| *Bill killed the cat.* | $\Rightarrow$ | *The cat died.* | $\Rightarrow$ | *The cat is dead.* |

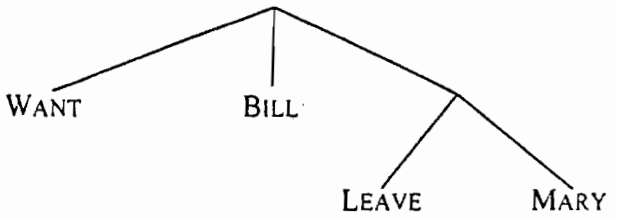
---

| | | |
|---|---|---|
| Stative | | *own, believe, know; (be) dead, tall, closed, open, ripe* |
| Active | action | *rent, run, (be) honest, paint* |
| | achievement | *arrive, leave, start, finish* |
| | accomplishment | *climb the mountain, paint the wall* |

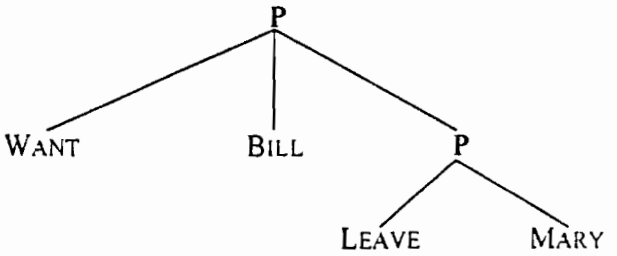
**Stative** predicates express a state; they cannot be used in the progressive or imperative, or with Action *do*.
**Active** predicates may express an **action** (durative and indeterminate as to end state), an **achievement** (punctual, representing an end state only), or an **accomplishment** (durative and equivalent to an action plus its terminal achievement). Durative actions can occur in the progressive, and volitional ones in the imperative. Both adjectives and verbs may be either active or stative.

| | | |
|---|---|---|
| *Rent/*Own that house, please.* | *What he did was rent/*own it.* | *Bill is renting/*owning a house on the West Side.* |
| *Be honest/*tall for a moment.* | *What he did was be honest/*tall.* | *Bill is being honest/*tall.* |
| *Bill walked for/*in a few hours.* | *Bill arrived *for/in a few hours.* | *Bill climbed the mountain for/in a few hours.* |
| *Bill stopped walking at 3.* | **Bill stopped arriving at 3.* | *Bill stopped climbing the mountain at 3.* |

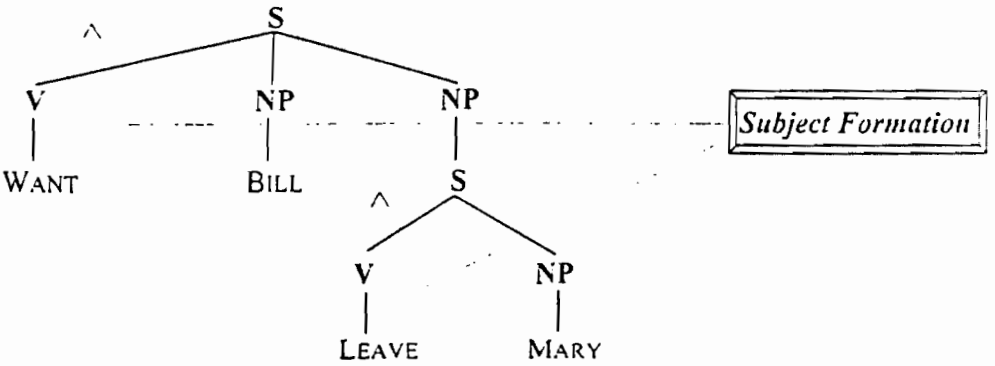
In the Logic Study Guide, we ended with a logical ***tree diagram*** for WANT (BILL, LEAVE (MARY)), in both unlabelled:




and labelled versions:

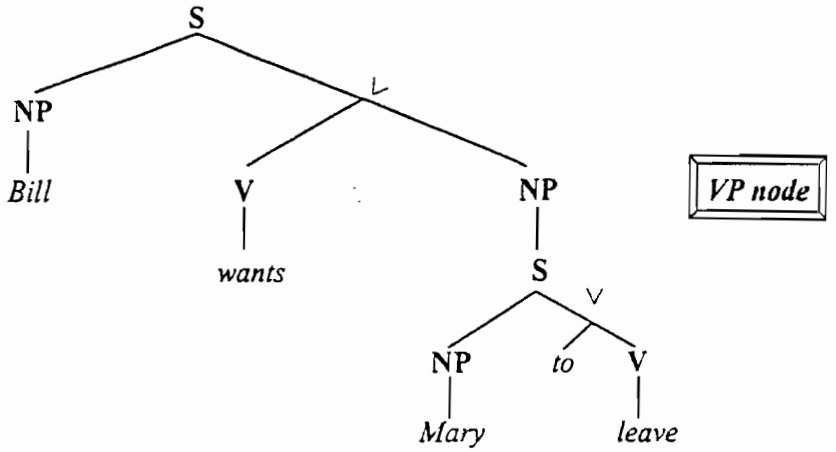



We remarked that one could label the Predicate and Argument nodes as well, and that it was common to use *S* instead of *P* to label propositions in such logical tree structures in linguistics. It is also common, in practice, to use *V* to label Predicates, and *N* (or *NP*, standing for ***Noun Phrase***) to label Arguments. This would produce the following diagram:

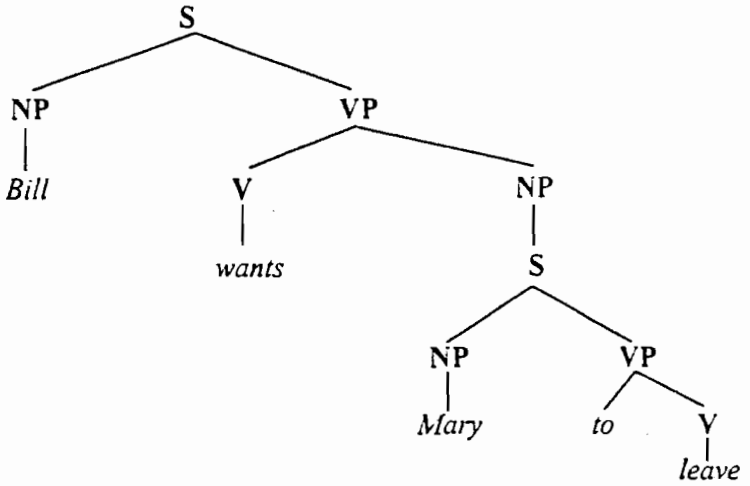



Note that, while these two predicates are in fact verbs, and the arguments are nouns, that's not always the case, and one may use V loosely to label any Predicate node, whatever its syntactic class might be. This kind of structural description, intermediate between logic and surface syntax, is called a ***deep structure***; we say this diagram represents the deep structure of *Bill wants Mary to leave.* Roughly speaking, deep structures are intended to represent the meaning of the sentence, stripped to its essentials. The deep structures are then related to the actual sentence by a series of relational ***rules.***

For instance, one such rule is that in English, there **must** be a subject NP, and it **precedes** the verb, instead of coming after it, as here. So we relate this structure with the following one by a rule of ***Subject Formation***, which applies to every deep structure towards the end of the ***derivation*** (the series of rule applications; a number of other rules would have already applied earlier, producing the other differences). In the diagram above, the effect of Subject Formation is indicated by the curved arrows; it moves the first argument of each clause up and out of the clause, forming a new constituent:




Subject Formation takes the first (Subject) argument NP following the V and moves it up to hang from the S node, leaving behind what remains of the initial S. The original S node is left unlabelled in this diagram, as is the original S node that remains downstairs after applying Subject Formation to the infinitive. What should we call these nodes? They're not Sentences any more; they're sentences that have lost their subject. They **are** constituents of the sentence, though, and since they are always headed by a V, they are traditionally labelled Verb Phrase, or **VP**. Adding these labels leads to the following diagram, which is called a ***Phrase-Marker***, or the ***Surface Structure***:




It's important to note that a derivation like this (of which we have seen here only the last step) is **not** intended to represent what goes on in a speaker's mind when they say the sentence; rather, it's just an abstract model, a way to keep the intermediate structures sorted out and to label the various stages in the chain of structures between the meaning, or deep structure, and the syntax, or surface structure.

The metaphor used here is as if the deep structure (the meaning) rises out of the depths of the mind like a sea monster, and transforms itself gradually as it rises, until it becomes something that can survive in the air, namely an actual piece of language, the surface structure, transformed from a chunk of thought and meaning. As Shakespeare put it, in a rather different context,

'It has suffered a sea change
Into something rich and strange.'

This is why this kind of grammatical model is often called ***transformational grammar***; the individual rules that relate stages of a derivation are sometimes called ***transformations***, though we will simply call them ***rules***. There are lots of different rules, and different kinds of rules, but since rules are abstractions and we are concerned here with data analysis, we will mostly pay attention to the structures that provide evidence for the rules, which are called, simply, ***constructions***. All syntax depends on constructions; every language has thousands of constructions, some common, some rare, and every variety in between. In English, the two most common constructions are the NP and the VP, which together make up every S; in fact, the basic structure of an English sentence is simply NP – VP. Both of these constructions have internal structure (that's why they're called *constructions*), and several different parts that have to come together in just the right way, ordinarily in just the right order.

***Verb Phrases*** are the more important and the more complex of the two construction types. The predicate in a clause determines almost everything else in the clause – what can be the subject, whether there is a direct or indirect object and what kind of noun can function as either, what kinds of constructions can be used in the clause, what prepositions and adverbs can be used, what auxiliary verbs can be used, and so on. The predicate (which is usually a verb, and almost always includes some verb in its VP, even if it's only an auxiliary like *be*) is the ***head*** of the VP and of the clause as a whole. No verb, no clause. At least, not in English. As I like to put it, verbs have more fun.

***Noun Phrases***, by contrast with VPs, are static and subordinate. Verbs are the type of word *par excellence* that indicates action, motion, and continuity in time; the German word for 'verb' is *Zeitwort*, which means 'time word'. The old saw still taught to children in school is that "a noun is the name of a person, place, or thing", while "a verb denotes action, being, or state of being". These definitions are precisely backward. It is **not** true that all nouns or all verbs mean these kinds of things; but it *is* true that persons, places, and things are denoted by nouns, while action, being and state of being are denoted by verbs. The problem with definitions like this is that they appeal to meaning instead of grammar to define grammatical categories.

For our purposes, we will call anything a *verb* that one can use in the present or past tense (technically, we say they ***take tense inflections***), and we will call anything a *noun* for which one can substitute a personal pronoun (*he, she, him, her, it*) without change in meaning. These are not perfect definitions, but they do have the advantage of being testable by any native speaker in the syntax lab, instead of requiring one to distinguish, for instance, whether *love* is a person, a place, or a thing, or whether *live* denotes 'action', 'being', or 'state of being'.

The rest of this study guide is about VPs . Verb Phrases, being clauses (sentences) without a subject, normally begin with a Verb node on the left. More often than not, this initial verb is an ***auxiliary verb***. Auxiliaries fall into several categories; English is changing and one of the most obvious changes of the last few centuries has been the multiplication of auxiliary verb group constructions. However, there are four canonical categories of auxiliary verb that can occur, alone or together, in an ***auxiliary verb chain***, before the main verb of a verb phrase; each must be followed by a particular form of the **next** verb, whether that next verb is the main verb or another auxiliary verb in the chain.. In their order of appearance, these are:

1. ***Modal Auxiliary Verbs***: *may, might, can, could, shall, should, will, would, must*
   modal auxiliaries must be followed by an ***infinitive*** verb form.
   *Bill might be here. Mary can go now.*
   (*be* and *go* are infinitive verb forms)
   [for more about modal auxiliary verbs, see http://www.umich.edu/~jlawler/aue/modals.html]

2. ***have***, the ***Perfect*** auxiliary; *have* must be followed by a ***past participle*** verb form
   *Bill has gone already. Bill might have left already.*
   (*gone* and *left* are past participle verb forms; the *have* in *might have* is an infinitive)
3. ***be***, the ***Progressive*** auxiliary; this *be* must be followed by a ***present participle*** form
   *Bill is leaving now. Mary has been driving the car. Bill might have been sleeping.*
   (*leaving*, *driving*, and *sleeping* are present participles; *been* is a past participle)
4. ***be***, the ***Passive*** auxiliary; **this** *be* must be followed by a ***past participle*** form
   *Bill was seen with Mary. Bill has been seen with Mary.*
   *Bill has been being seen with Mary since January.*
   *Bill might have been being seen with Mary even before then.*
   *Bill is not being seen with Mary these days.*
   *Bill might be seen with Mary again soon.*

Note that there are two different auxiliary uses of *be*: the progressive, which follows it with a present participle, and the passive, which follows it with a past participle. It is the form of the following verb that we use to tell the difference between the two constructions. Passive is a little different from the other auxiliaries – there are other considerations in the passive beyond the auxiliary and verb form. Passive is a rule that relates an transitive active sentence with an intransitive passive sentence, in which, besides the use of auxiliary *be* followed by the past participle of the main verb, the active direct object becomes the passive subject, the active subject shows up in the passive, if at all, in a prepositional phrase with *by*, and there is no change in meaning despite these massive changes in structure:

*The Acme Construction Co. erected this building in 1980.*
**Passive** ↔ *This building was erected by the Acme Construction Co. in 1980.*

These canonical auxiliary verbs must occur in the order specified, and each must be followed by the correct form of the next verb in sequence. The first verb in the verb phrase of a main clause **must** be marked for tense – i.e, it must be either present or past tense; this applies to main verbs if there are no auxiliaries, or to the first auxiliary if there are. (Except for modal auxiliary verbs, which have no tense markings (they are called ***defective*** verbs because they lack these tense forms, as well as participles and infinitives); as we will see, modal auxiliaries are exceptional in practically every way.) In all the examples above, the **first** auxiliary verb (the un-underlined verb) was either present tense or past tense, or a modal auxiliary.

This ***first auxiliary verb*** position is a very important one in English, since many syntactic rules require something to happen to the first auxiliary verb, and may require there to **be** a first auxiliary verb even if the sentence doesn't have one. Consider what happens when sentences with auxiliary verbs in them get used with a negative, or get formed into a *yes/no* question (i.e, a question that can be answered with *yes* or *no*; there are several other kinds of question):

*Bill was living on Elm Street.*
(progressive auxiliary verb *was* in past tense; present participle *living*)
**Negative** ↔ *Bill wasn't living on Elm Street.*
(past tense auxiliary *was* takes negative)
**Question** ↔ *Was Bill living on Elm Street?*
(auxiliary *was* inverted for question)

*Bill has been living on Elm Street.*
(perfect auxiliary verb *has* in present tense)

**Negative** ↔ *Bill hasn't been living on Elm Street.*
(present tense auxiliary *has* takes negative)

**Question** ↔ *Has Bill been living on Elm Street?*
(auxiliary *has* inverted for question)

Consider, by contrast, what happens when there is no auxiliary verb:

*Bill lives on Elm Street.*
(no auxiliary verb; main verb *lives* in present tense)

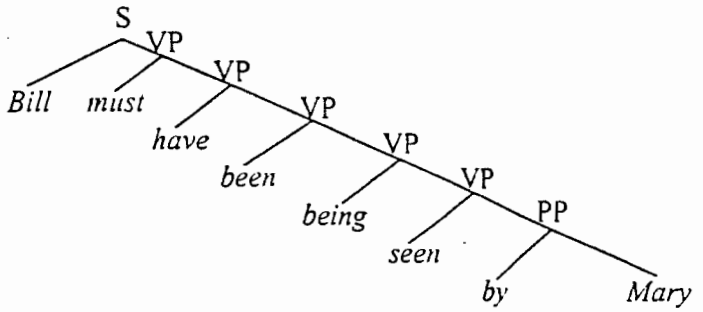
**Negative** ↔ *Bill doesn't live on Elm Street.*
(auxiliary *does* in present tense takes negative, with infinitive *live*)

**Question** ↔ *Does Bill live on Elm Street?*
(inverted present tense *does* required for question, with infinitive *live*)

Where did the *does* come from above? In both cases, it is ***inserted*** by a rule which requires the presence of at least one auxiliary verb in the VP: respectively, the rules of ***Negative Formation*** (which requires that a negative word come after the first auxiliary verb), and of ***Yes/No Question Formation*** (which requires that the first auxiliary verb appear inverted, **before** the subject, at the beginning of a *yes/no* question). This process is called **Do-*Support***; the basic idea is that sometimes an auxiliary verb is required, and if so, a present or past form of *do* is supplied, free of charge.

*Do*-support *do* (there are several other kinds of auxiliary *do* constructions; *do*-support *do* is the most common), like a modal auxiliary, must be followed by an infinitive form of the main verb; unlike a modal, however, it is inflected for present or past tense. *Do*-support *do* has no meaning, and there is no meaning change in a sentence from *do*-support. Since *do*-support only occurs in cases where there are no other auxiliaries, this auxiliary *do* never occurs in the multiple sequences of the other (Modal, *have*, and *be*) auxiliaries discussed above; it's a parallel construction.

A question arises about how such constructions as auxiliary verbs and verb chains ought to be represented in tree diagrams. There are several ways to handle these, but the simplest one, which we will use, is to simply treat each verb as the head of its own VP node, so that in *Bill must have been being seen by Mary* the auxiliary verb chain would have the tree structure:




In principle, there is only one VP per S, but clauses can be broken up and merged with one another by a number of processes, and the construction of auxiliary verbs and verb chains is one such. These verbs may be on the way to becoming verbal prefixes; in generations, auxiliaries often get reduced and attached to the words they modify, until all that is left is a suffix (from auxiliaries that follow) or prefix (from those that precede). This is the origin, for instance, of the future tense in French and Spanish.

## VP Study Guide

There are many, many other auxiliary constructions in English besides *do*-support and canonical verb chains. Here is a list of some VP constructions that everybody is familiar with; there are plenty more, many with special pronunciations that are unique to the construction:

*I had to go* ..... /ayhǽrəgo/
*I used to go* ..... /ayústəgo/
*I am used to going* ..... /amyústəgowən/
*I used to be used to going* ..... /ayùstəbiyústəgowən/
*I am going to be used to going* ..... /amgánəbiyùstəgowən/
*I was going to go* ..... /awəzgánəgo ~ awəzgówənəgo/
*I might have had to go* ..... /aymàyrəhǽdtəgo/
*I had been going to go* ..... /aydbɪŋgówənəgo/
*I might have been going to go* ..... /aymàyrəbɪŋgówənəgo/
*I had had to go* ..... /aydhǽdtəgo/
*I used to have to go* ..... /ayùstəhǽftəgo/
*I was going to have to go* ..... /awəzgənəhǽftəgo/
*I have got to go* ..... /aygárəgo/
*I want to go* ..... /aywánəgo/
*I don't want to go* ..... /arõwánəgo/
*I have got to want to go* ..... /aygárəwànəgo/
*I ought to go* ..... /ayórəgo/
*I ought to want to go* ..... /ayórəwànəgo/
...etc.

These come from several different sources (some of which are preserved in the way they're written), and they have different meanings and uses, and they're at several different stages on the road from independent clause to auxiliary construction; but they illustrate just how complex VP constructions have become in English.

> As an exercise, try to isolate each construction that appears in the list above, give it a name (e.g, the *have to* construction), mention any oddities about its pronunciation, and indicate what it means, what must follow it, and what it can combine with.

We will return to these constructions presently; for now, let us consider what else is in the VP besides the main verb and its auxiliaries. One thing is the direct object and another is the indirect object; these are the non-subject arguments of transitive and bitransitive predicates. Everybody knows there's a difference between the subject and the objects, but few can articulate these differences. That's not surprising, because there is no consistent relation between the subject and the object *per se*, but rather there are relations between the subject and the verb, and between the object(s) and the verb. Some of these relationships are reasonably regular and predictable: subjects of verbs that denote actions tend to be agents of those actions, while subjects of predicates denoting states tend to be experiencers of those states. Indirect objects of bitransitive verbs, which ordinarily refer to an event of transfer, are goal of transferred things, which show up as direct objects, while the subject is the agent and source.

But the relationship between a transitive predicate and its direct object varies significantly, depending on the nature of the predicate. About the only generalization that can be made is that the direct object is ordinarily **affected** by whatever the predicate refers to. Thus the direct object of a verb denoting a bodily action like *kick*, *hit*, or *touch* refers to the 'target' of the action by the subject, while the direct object of a verb denoting a sensation like *see*, *fear*, or *learn* refers to something that causes the sensation in the subject; each individual verb has its own individual relation with its object(s).

For example, consider the different roles that *the ball* plays in the following:

- *Bill kicked the ball.* [affected patient]
- *Bill made the ball.* [created thing]
- *Bill saw the ball.* [sensory percept]
- *Bill mentioned the ball.* [conceptual topic]
- *Bill remembered the ball.* [experiential percept]
- *Bill feared the ball.* [emotional percept]
- *Bill wanted the ball.* [motivational goal]

In these sentences (and it would be easy to go on for many, many more) *the ball* sometimes refers to a physical object, sometimes to the sensory image of a physical object, and sometimes to an abstract mental concept. Each of these is further qualified by how it is affected or how it is related to the subject by virtue of the meaning of the verb. The precise nature of the relation of direct object is determined by the verb; in effect, it is part of the meaning of the verb. It is for this reason that the direct object is considered part of the Verb Phrase, while the subject is not. In terms of the tree structure, this is shown by the independent status of the subject NP, directly under the S node, while the object NP is directly under the VP node.

As an exercise, construct another dozen sentences like those above, using other possible objects, like personal names, collective nouns, or place names. What other kinds of direct object relation can you find? Try to construct pairs of sentences with the **same** kind of direct object; in such cases, what can you say about the pair of verbs involved?

The direct object NP usually follows the main verb, which is at the end of the auxiliary verb chain. The object and the main verb are very tightly bound; even words like adverbs that can go almost anywhere in the sentence can't come between the main verb and the direct object:

- *Yesterday Bill kicked the ball.*
- *Bill rarely kicked the ball.*
- *Bill kicked the ball savagely.*
- **Bill kicked yesterday the ball.*
- **Bill kicked rarely the ball.*
- **Bill kicked savagely the ball.*

(Incidentally, the convention in syntax is to mark ungrammatical sentences with an **asterisk**, like the last three sentences above; this is done to demonstrate when application of a rule to a given construction is not allowed. Creating sentences by application of rules is part of studying grammar, and it is important to be able to tell where rules apply and where they don't; hence the convention of generating – but marking – ungrammatical sentences.)

The other argument that sometimes occurs in the VP is the ***indirect object***. Indirect objects can only occur with bitransitive predicates, just as direct objects can only occur with transitive predicates. Bitransitive predicates, as noted before, all refer to some kind of **transfer**, either physical (*I tossed the ball to Bill*) or communicational (*I told the story to Bill*), of a ***trajector*** (denoted by the direct object) from a ***source*** (denoted by the subject) to a ***goal*** (denoted by the indirect object). It is almost always the case that the indirect object in a clause refers to a **person**, since most verbs of transfer refer to transfers between people.

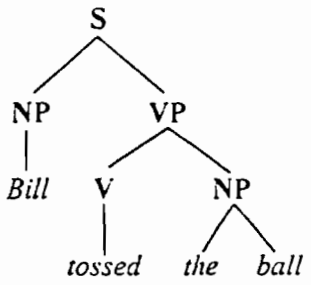
Indirect objects can occur with direct objects in two different constructions. One puts the direct object **before** the indirect object, and marks the indirect object with the preposition to; the other puts the direct object **after** the indirect object, and just uses the two noun phrases:

| | | |
|---|---|---|
| *I tossed the ball to Bill.* | ~ | *I tossed Bill the ball.* |
| *I told the story to Bill.* | ~ | *I told Bill the story.* |

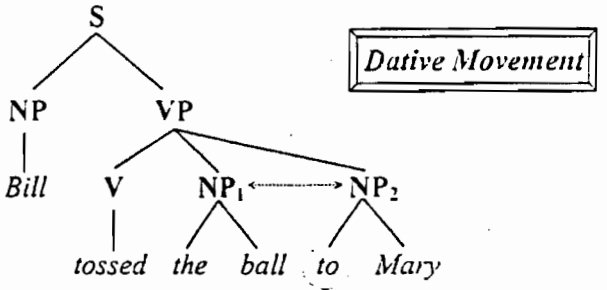
This is an example of an ***alternation***; that is, a systematic relation between two different constructions that mean the same thing. We say these two constructions alternate – one can use either. Alternations are always ***governed*** by a verb – in this case, they are governed by all (or almost all) bitransitive verbs – which means that it is the verb, and the type of verb, that determines whether the alternation is possible. An alternation can define a rule that changes one of the constructions into the other; this particular alternation is called the ***Dative Alternation***, and the rule that changes the first construction into the second is variously called ***Dative***, ***Dative Movement***, or ***Goal Advancement***.

(This is probably a good place to point out that there are many, many theories of syntax that are called *generative* by various people. They have proliferated since the original advent of generative grammar in 1956, and now, after a half-century of heresy and schism, they constitute a mutually incompatible and totally incomprehensible spectrum of terms, rules, axioms, claims, and counterclaims. Since our purpose is to describe and explain English grammar, using only terminology necessary to describe the phenomena we are considering, we will ignore most of them here. I mention alternative terms only to show that they refer to the same phenomena.)

Since both versions of the Dative alternation mean the same thing, it's important to note that the goal NP in both cases can be called the indirect object; its position doesn't change its grammatical role. However, this does pose a problem for our tree structures, since one or the other order of direct and indirect object ought to be chosen as the basic one, just to be consistent. Consequently, we will somewhat arbitrarily choose the first order – the one with *to* – as the basic one, thus will denoting the structures of both transitive and bitransitive clauses with the direct object immediately following the main verb. The indirect object will then follow the direct object, thus:



Transitive Sentence



Bitransitive Sentence

Note that the indirect object node in the tree diagram on the right is marked as $NP_2$, even though it is obviously a prepositional phrase (*PP*). *PP* would be one acceptable label for this node, but I have chosen to label it as an NP for two reasons: (1) it functions as an NP, the indirect object of the clause, and (2) the preposition *to* disappears under the Dative alternation. Labelling it as a PP would draw attention to the preposition, which is dispensible, instead of the grammatical relation of indirect object NP. The purpose of tree diagrams is to point out the important relations, rather than to be some kind of complete accounting of all the minor details. In general, prepositional phrases in English mostly function as (specially-marked) NPs, and we will often simply call them NPs. Under this analysis, then, Dative movement simply deletes the preposition *to* from $NP_2$ (indicated by the ***Zero*** marker '∅') and exchanges the positions of $NP_1$ and $NP_2$ (indicated by the double-headed arrow).

We now have a conventional representation for all three arguments of a proposition. Recall that there are never more than three: subject, direct object, indirect object. Every sentence has a subject in English, transitive sentences have direct objects as well, and bitransitive sentences have both subject and direct object, plus an indirect object, all portraying transfer of some real or abstract trajector from source to goal. These three categories of NPs in a clause are called ***grammatical relations***, to distinguish them from all other uses of NPs, like apposition or object of preposition; indeed, some syntactic theories, like ***Relational Grammar***, simply call Subject, Direct Object, and Indirect Object ***1***, ***2***, and ***3***, respectively, because they are considered **so** basic.

Ramifications of this scheme fall into two categories: (a) other parts of the VP, that **don't** bear grammatical relations, and (b) extensions of one of the grammatical relations, such as having a clause instead of a simple NP as the subject or direct object. We will deal with category (b) in a separate study guide on Complements. Here we will take up category (a), which largely consists of adverbials.

Adverbs have long been called a 'wastebasket' category in syntax. Their definition is very general: adverbs are distinguished from adjectives – which modify nouns – by saying they 'modify verbs, adjectives, or other adverbs'; to this one can add that they modify phrases and clauses as a whole. If something doesn't fit nicely in some other word class, it generally gets lumped in as an adverb of some sort. Traditionally, ***adverbs*** (and ***adverbials***, which means 'any chunk that acts like an adverb' – not a terribly precise definition) represent qualifications and afterthoughts to ordinary propositions. If an clause, for instance, describes an event (the prototype situation), then that event **must** have taken place at some ***time***, in some ***place***, and under some ***circumstances***; these may or may not be mentioned in the clause, and they may or may not be important to understanding it. If they are, then one may use some kind of adverb or adverbial to denote them.

Besides these ***essential*** adverbials, which in principle may be added to **any** sentence to describe place, time, or circumstance, there are also ***specific*** adverbials that describe other, special, kinds of qualifications that are not part of any and every event. One of the differences between the two kinds of adverbials is what happens to them with negation. If the adverbial is **not** essential, but rather specific, then negating it **doesn't** negate the whole sentence, and fronting the negative adverbial **doesn't** govern subject-verb inversion:

*I didn't make that for any reason.* ~ **For no reason did I make that.*
*I didn't make that in any manner.* ~ **In no manner did I make that.*
*I didn't make that with any instrument.* ~ **With no instrument did I make that.*

However, if the adverbial **is** essential, then negating it **does** serve to negate the whole sentence, and fronting the negative adverbial **does** govern subject-verb inversion:

*I didn't make that at any time.* ~ *At no time did I make that.* ~ *Never did I make that.*
*I didn't make that at any place.* ~ *At no place did I make that.* ~ *Nowhere did I make that.*
*I didn't make that in any way* ~ *In no way did I make that.* ~ *No way did I make that.*
*I didn't make that under any circumstances* ~ *Under no circumstances did I make that.*

Both of these kinds of adverbials can be considered constituents of the VP. Their placement in the tree structure is somewhat arbitrary, since they may in fact occur in a number of positions in the actual sentence. However, all of them do often occur at the end of the sentence – as afterthoughts, usually – and that is a traditional place to put them in diagrams, treating other positions as derived by movement rules. Since adverbs are largely unplumbed mysteries in English grammar, this solution will do as well as any other for our purposes.

# The English Verb Phrase

1. They watch us.
2. They are watching us.
3. They have watched us.
4. They might watch us.
5. They will watch us.
6. They might be watching us.
7. We are watched (by them).
8. We will be watched (").
9. We have been watched (").
10. We will have been watched (").
11. They watched us.
12. They were watching us.
13. They had watched us.
14. They might have watched us.
15. They will have watched us.
16. They may have been watching us.
17. We were watched (by them).
18. We could have been watched (").
19. We had been watched (").
20. We would have been watched (").
21. We must have been being watched (by them).

---

a. Where does the present or past tense morpheme go? State the rule.

b. How do you form a question answerable by "yes" or "no"for each of the statements above? State the rule.

c. If you wanted to put a ***not*** into each of the statements above,how would the sentence look? State the rule.

d. Can you contract any part of the sentences above? Which parts? How? State the rules.

e. What happens if you change the order of any of the auxiliaries above? Are there any other words that might substitute for any of them?

---

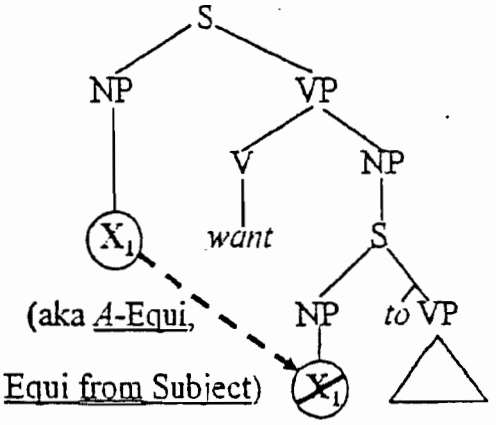
# English Reflexives

1) I shave myself.
2) You shave yourself.
3) He shaves himself.
4) We shave ourselves.
5) You shave yourselves.
6) They shave themselves.
7) *I shave yourself.
8) *You shave myself.
9) *He shaves yourself.
10) *We shave yourselves.
11) *You shave ourselves.
12) *They shave yourselves.
13) Shave yourself.
14) Shave yourselves.
15) *Shave myself.
16) *Shave himself.
17) I want you to shave yourself.
18) *I want you to shave myself.
19) I expect that I can shave myself.
20) I expect to shave myself.
21) I want to shave myself.
22) Bill wants to shave himself.
23) I want Bill to shave him.
24) I want Bill to shave himself.
25) Bill wants to shave him.
26) Bill wants to shave himself.

# Equi-NP-Deletion vs Subject Raising

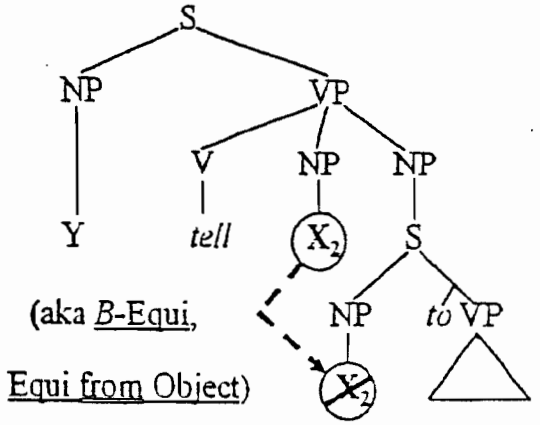
(Subject or Object Infinitive Complements only)

2-Place Equi (e.g. *want, try, eager*)
Upstairs **Subject** coreferential to
Downstairs Subject (deleted)



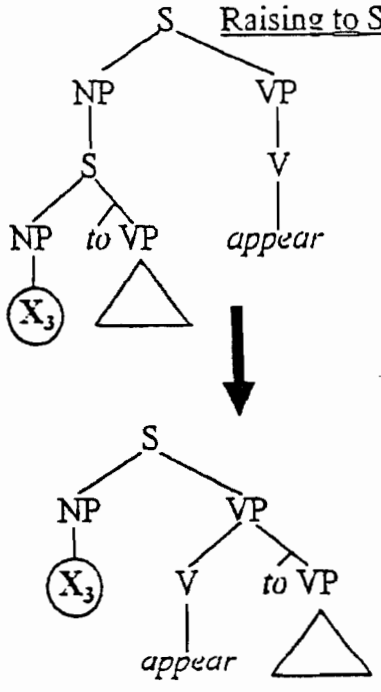

*$X_1$ wants to VP*

3-Place Equi (e.g. *tell, order, make*)
Upstairs (Indirect) **Object** coreferential to
Downstairs Subject (deleted)



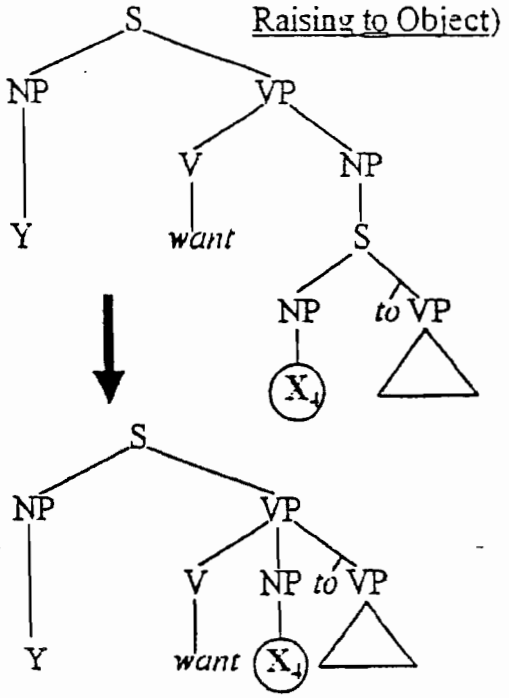

*Y told $X_2$ to VP*

1-Place Raising (e.g. *seem, appear*)
Downstairs Subject Raised to become
Upstairs **Subject** (aka A-Raising,
Raising to Subject)




*$X_3$ appears to VP*

2-Place Raising (e.g. *want, believe, consider*)
Downstairs Subject Raised to become
Upstairs **Object** (aka B-Raising,
Raising to Object)




*Y wants $X_4$ to VP*

# The Cliff's on Equi and Raising

**Equi** (short for *Equivalent Noun Phrase Deletion*) and **Raising** (short for *Subject Raising*) are two syntactic rules (aka *processes*, *transformations*, or *alternations*) that relate sentence structures. There are hundreds of such rules in every language, of many types.

Equi and Raising are both governed cyclic rules. A **governed** rule is one that may only apply if there is a particular verb as the main verb in the clause it applies to. A **cyclic** rule is one that may only apply in a single clause, but may be applied repeatedly in subordinate clauses. Governed cyclic rules constitute a major type of syntactic rule; cyclic rules tend to be governed, and vice versa.

Equi and Raising are important rules of English:

- because they help to categorize verb classes – one often speaks of 'Raising verbs' or 'Equi verbs', for instance, as a shorthand for the class of verbs that govern one or the other process.
- because they're very common in use; that is, there are a lot of Equi verbs and Raising verbs, so it's a major classification.
- because they both produce the same kind of structures – sentences that look alike – from different initial structures, so they're easy to confuse and they require special tests to distinguish.

Both rules apply to complement clauses. **Complements** are noun clauses – subordinate clauses that function as the subject or the object of particular verbs. There are **four types** of complements in English, each of which can occur either as subject or as object, depending on the main verb:

- Two **finite** types, which must contain a verb in the present or past tense:
  - ***that* clauses**, which start with *that* (often deleted)
    Subj: *That he practiced the tuba at 3 AM surprised me.*
    Obj: *I think that he practiced the tuba at 3 AM.*
  - **embedded questions**, which start with a *wh*-word
    Subj: *Why he practiced the tuba at 3 AM surprised me.*
    Obj: *I know why he practiced the tuba at 3 AM.*
- Two **non-finite** types, which contain verb forms that don't take present or past tense endings:
  - gerund clauses, which use the *-ing* form of the verb:
    Subj: *His practicing the tuba at 3 AM annoyed me.*
    Obj: *I protested his practicing the tuba at 3 AM.*
  - **infinitive clauses**, which use the root form of the verb and usually (but not always) precede it with *to*.
    Subj: *For him to practice the tuba at 3 AM would annoy me.*
    Obj: *She forbade him to practice the tuba at 3 AM.*

Of these types, infinitives are by far the most complex, occur in the most constructions, and participate in the most rules. Equi and Raising both apply to infinitive complements; Equi also applies to gerund complements, but there it can't be confused with Raising, since Raising is restricted to infinitive complements.

(Other rules that can apply to infinitives include Extraposition, which moves the infinitive phrase to the end of the sentence and leaves *it* behind as subject in the main clause:

*It's easy (for him) to practice the tuba.*

and ***Tough*-Movement**, which raises the Object of the complement clause to become subject of the main clause:

*The tuba is easy (for him) to practice.*)

Both Equi and Raising have the effect of reducing an infinitive complement clause to a simpler nonclausal structure (normally appearing at the end of the sentence). Such reductions can't occur with finite clauses, only non-finite ones; consequently neither Equi nor Raising applies to finite complements like *that* clauses or embedded questions.

Both Equi and Raising occur in two versions, called *A* and *B*. We will be concerned here with the *A* configuration, since the arguments and tests work the same way for the *B* configuration. So, from now on, unless otherwise noted, *Raising* refers to *A-Raising*.

- ***A-Raising*** occurs with Subject complements and raises the subject of that complement to be the subject of the main clause, moving the infinitive phrase that's left to the end of the main clause:

  *For Bill to leave early is likely.* → *Bill is likely to leave early.*

  Most verbs that govern Raising with infinitive subject complements require it, since they tend to be verbs that frame some predicate in the complement and don't have much meaning by themselves, e.g, *seem, appear, tend, fail, happen, start, turn out*. These verbs don't sound right when they appear at the end of a sentence, and the impulse is to put something after them, an effect that Raising produces:

  | | | |
  |---|---|---|
  | **For Bill to enjoy the play seemed.* | → | *Bill seemed to enjoy the play.* |
  | **For Bill to enjoy the play appeared.* | → | *Bill appeared to enjoy the play.* |
  | **For Bill to be late tends.* | → | *Bill tends to be late.* |
  | **For Bill to attend the meeting failed.* | → | *Bill failed to attend the meeting.* |
  | **For there to be an accident happened.* | → | *There happened to be a accident.* |
  | **For it to snow started.* | → | *It started to snow.* |
  | **For Bill to be the winner turned out.* | → | *Bill turned out to be the winner.* |

  Notice that *A*-Raised sentences have the structure

  **Subject - Verb - *to* - Infinitive phrase**

  This is the ***A* Configuration**, produced **both** by *A*-Raising and by *A*-Equi.

- ***A-Equi*** deletes the subject of an Object complement because it's identical with the subject of the main clause. That is, there are really **two** references to a given noun in an Equi sentence; one as the subject of the main clause, and one as the subject of the subordinate (complement) clause, even though only one appears in the actual sentence. Conventionally, we say that the one in the subordinate clause is deleted (there are other ways of dealing with this fact, but this is the way Equi views it).

  So, in an Equi sentence like

  *Bill wants to leave at noon.*

  *Bill* is the subject of *want*, therefore referring to the person doing the wanting, and also is the subject of the complement infinitive *to leave*, therefore referring also to the person doing the leaving. This is not the case with Raising; a Raised subject of a Raising verb does not really have an independent relation with that verb; i.e, in

*The casserole seems to be done.*

*the casserole* is clearly the thing that is done (subject of the complement *to be done*), but it's just as clearly **not** the thing that is doing the seeming. *Seeming* isn't an activity or state that can happen independently. So there's only **one** instance of that noun phrase in an Raised sentence, which originates as the subject of the complement infinitive, but shows up on the surface as the subject of the Raising verb.

**That's** the basic difference between Raising and Equi:

- **2 identical** subject nouns in an Equi sentence,
  one upstairs in the main clause, and another downstairs in the object complement;
  [*Bill*$_1$ *wants* [[*(for)* *Bill*$_2$] *to leave at noon*]]
  Equi deletes the one downstairs,
  leaving only the infinitive at the end.
  [*Bill*$_1$ *wants* [ __$_2$ *to leave at noon*]]
- **1** (and only 1) subject noun in a Raising sentence,
  downstairs in the subject complement;
  [[*(For)* *the casserole*] *to be done*] *seems*]
  Raising moves it upstairs to be subject of the main clause,
  and moves the infinitive to the end.
  [*The casserole seems* [*to be done*]]

This distinction between Equi and Raising is essentially one of **meaning** – two different kinds of verbal meaning – and can be seen by investigating meaning; but meaning is kind of a slippery subject to deal with, and syntactic research prefers to have syntactic tests.

Luckily, such tests exist; they have the same status in syntax as slide stains have in biology – they allow real differences to be made evident by taking advantage of some accidental property of the data to produce a clear distinction. There are dozens of such tests, but the two easiest ones to understand and apply are the **Funny NP** test and the **Passive Equivalence** test.

- ***Funny NPs*** are idiomatic noun phrases that are known to be limited to particular phrases or constructions, and can't occur just anywhere. Frequently they are **dummies**, i.e, words like the *it* in *It's a long way to Tipperary* that don't refer to anything at all, but are just there to hold a subject slot open.

  Since funny NPs have limited occurrence, if they occur elsewhere they **must** have been moved there. So grammatical occurrence of a funny NP as subject of a Raising verb with the right kind of complement is evidence that the NP is Raised; contrariwise, since Equi verbs have real subjects, Funny NPs can't occur with them. So we can generate clear differences, for instance (in the usual idiomatic senses) [with conclusions]:

| | |
|---|---|
| *The cat seems to be out of the bag.* | [*seem* governs Raising] |
| **The cat wants to be out of the bag.* | [*want* governs Equi] |
| *The shit is likely to hit the fan.* | [*be likely* governs Raising] |
| **The shit is eager to hit the fan.* | [*be eager* governs Equi] |
| *There appeared to be a unicorn in the garden.* | [*appear* governs Raising] |
| **There tried to be a unicorn in the garden.* | [*try* governs Equi] |
| *It started to snow yesterday.* | [*start* governs Raising] |
| **It arranged to snow yesterd ay.* | [*arrange* governs Equi] |

- ***Passive Equivalence*** refers to the fact that an active sentence means the same thing as its passive transformation (Passive is another cyclic governed rule). So

  *Bill examined Mary.*

  is equivalent to

  *Mary was examined by Bill.*

  If one is true, so is the other, and if one is false, so is the other. The only difference between them is in which NP is the subject. This fact can be exploited by noting that a Raising verb will raise whatever NP happens to be the subject of its complement, and thus doesn't care whether the complement is active or passive; it will mean the same thing either way. So

  *Bill seems to have examined Mary.*

  is equivalent to

  *Mary seems to have been examined by Bill.*

  However, with an Equi verb, there is a different NP as subject of the main clause in each case, so the sentences **aren't** synonymous, even though the complements are:

  *Bill wants to examine Mary.*
  ≠ *Mary wants to be examined by Bill.*

  These mean **different** things, and the conclusion is then that they have different subjects, hence Equi applies, not Raising.

That's how the *A* Configuration works. The *B* Configuration is similar, but with an extra noun object between the main verb and the infinitive:

**Subject - Verb - *to* – Object - Infinitive phrase**

There is both ***B*-Raising** and ***B*-Equi**; both occur in object complements. B-Raising raises the downstairs subject to become the upstairs object, while B-Equi already has an upstairs object (an indirect object, the receiver), and deletes the downstairs subject by coreference with it.

Some contrastive examples of B-Raising and B-Equi, with tests applied:

| | |
|---|---|
| *Bill wants it to rain tomorrow.* | [*want* governs *B*-Raising] |
| **Bill ordered it to rain tomorrow.* | [*order* governs *B*-Equi] |
| *Bill believes there to be no reason for that.* | [*believes* governs *B*-Raising] |
| **Bill told there to be no reason for that.* | [*tell* governs *B*-Equi] |
| *Bill considers Mary to have beaten Mike.* | [*consider* governs *B*-Raising] |
| = *Bill considers Mike to have been beaten by Mary.* | |
| *Bill forced Mary to beat Mike.* | [*force* governs *B*-Equi] |
| ≠ *Bill forced Mike to be beaten by Mary.* | |

**For more on Equi and Raising –**
diagrams, more examples, more tests, and exercises (with answers),
see http://www.umich.edu/~ilawler/equi.pdf

# Tests for Equi-NP-Deletion vs Subject Raising

## Dummies (*it, there*)

*There seems/*wants to be a party tonight.*
*There is likely/*afraid to be a party tonight.*
*I expect/*advise it to rain tomorrow.*
*I expect/*advise there to be a party.*
*It's likely/*afraid to rain tomorrow.*
*It seems/*wants to be raining out.*

## Idiom chunks

*The cat seems/is likely/*wants/*is afraid to be out of the bag.*
*Advantage seems/*wants to have been taken of Mary.*
*The shit is likely/*afraid to hit the fan soon.*

## Metonymy

| | | |
|---|---|---|
| *Max is heavy.* | *Max seems to be heavy.* | (*Max* = Max's body) |
| *Max is Jewish.* | *Max seems to be Jewish.* | (*Max* ≠ Max's body) |
| *Chomsky seems to be published in Massachusetts.* | | (*Chomsky* = Chomsky's writings) |
| *Chomsky wants to be published in Massachusetts.* | | (*Chomsky* ≠ Chomsky's writings) |
| *Canberra contains a large central plaza.* | | (*Canberra* = the city of Canberra) |
| *Canberra refuses to compromise.* | | (*Canberra* = the capital of Australia) |

*Canberra seems/*wants to contain a large central plaza.*

## *All*-detachment

*All of the men seem to be running.*
*The men all seem to be running.*
*The men seem to all be running.*
*All of the men want to get elected.*
*The men all want to get elected.*
**The men want to all get elected.*

## Passive equivalence

| | | |
|---|---|---|
| *Bill is likely to call Mary.* | = | *Mary is likely to be called by Bill.* |
| *Bill is afraid to call Mary.* | ≠ | *Mary is afraid to be called by Bill.* |
| *I expect Bill to call Mary.* | = | *I expect Mary to be called by Bill.* |
| *I advised Bill to call Mary* | ≠ | *I advised Mary to be called by Bill.* |

## Assignment:

For each of the following predicates, determine (and give evidence for) how many places it has, and whether it takes Raising or Equi.

*afraid, appear, arrange, believe, care, cause,*

*consider, eager, fail, force, happen, likely,*

*make, manage, order, refuse, seem, start,*

*teach, tell, tend, try, turn out, urge, want*

**NB:** Restrict your inquiries to those senses of the verbs that take infinitive complements.

# Object Complements

1. He considers himself to be a genius.
2. He considered dieting to be unnecessary.
3. She considered that the waffle iron was broken.
4. He finally managed to get the bill paid.
5. I see you found the book.
6. When you see her dancing, you forget you hate her.
7. He is aware that he's a figure of fun.
8. He never confessed to robbing the bank.
9. You'd better forget about asking him again.
10. He promised me never to smoke another cigarette.
11. He ordered me never to smoke another cigarette. 1
2. She's afraid to confront him.
13. Don't forget he's a Black Belt.
14. They saw her leave.
15. I promised to wash the dishes.
16. He knows why we're here.
17. Will they know to come here?
18. I listened to him tell the story once again.
19. He confessed that he took the book.
20. Bill doesn't know what bit him.
21. Frank is aware of what bit him.
22. Joe never knew it bit him.

# Object Complements

On the preceding page you will find some example sentences illustrating several processes that apply to **object complements** (i.e, **noun clauses** that function as direct object). The **matrix predicates** (i.e, the heads of the VPs that have the noun clauses as objects) are underlined in each. These predicates are:

| | | | | |
|---|---|---|---|---|
| ***see*** | ***promise*** | ***know*** *(about)* | *(be)* ***aware*** *(of)* | ***forget*** *(about)* |
| ***order*** | ***consider*** | ***listen*** *(to)* | ***confess*** *(to)* | *(be)* ***afraid*** *(of)* |

Each of these (like all predicates) has its special pattern of usage. The relevant variables in this pattern are the type(s) of complement (non-finite ones like infinitive and gerund, and tensed ones like *that* S and embedded *WH*-question) that are allowed or required by the matrix predicate, two rules that can apply to object complements:

1) **Equivalent Noun Phrase Deletion** (Equi; with non-finite complements)

2) **Subject-Raising** (Raising; with infinitives only)

and other rules, like **Passive**, that may be fed by these rules. Note that object complements can occur with both 2-place predicates (with A-Equi from Subject and B-Raising to Object) and 3-place predicates (with B-Equi from Object but without Raising).

Give syntax lab reports for each predicate, with example sentences (your own or ones from the data) for questions (1) – (4), noting any unusual phenomena. For example,

Predicate: ***believe*** 2-place predicate Test clause: PAST (WRITE (BILL, KK))

1)a Does the predicate take a plain gerund complement?
No. *I believe Bill('s) writing/having written "King Kong".
1)b Does the predicate take a gerund complement with Equi?
No. *Bill believes writing/having written "King Kong".
2) Does the predicate take a *that*-complement?
**Yes.** I believe (that) Bill wrote "King Kong". (Optional *that*)
3)a Does the predicate take a plain infinitive complement?
No. *I believe for Bill to write/have written "King Kong".
3)b Does the predicate take an infinitive complement with Equi?
No. *Bill believes to write/have written "King Kong".
3)c Does the predicate take an infinitive with Subject-Raising?
**Yes.** I believe Bill to have written "King Kong".
Bill believes himself to have written "King Kong".
3)d Does the predicate take an infinitive feeding Passive?
**Yes.** Bill is believed to have written "King Kong". (Fed by B-Raising)
4) Does the predicate take an embedded question complement?
No. *I believe whether Bill wrote "King Kong".

1. For you to explain it again is unnecessary.
2. It's unnecessary (for you) to explain it again.
3. That he arrived late is significant.
4. It's significant (that) he arrived late.
5. That we got here on time amazes me.
6. It amazes me (that) we got here on time.
7. For me to see that again makes me sad.
8. It makes me sad (for me) to see that again.
9. (My) seeing that again makes me sad.
10. It makes me sad (my) seeing that again.
11. That she would do that makes me sad.
12. It makes me sad (that) she would do that.
13. *That he is ill seems (to me).
14. It seems (to me) that he is ill.
15. *For him to be ill seems (to me).
16. *It seems (to me) (for) him to be ill.
17. He seems (to me) to be ill.
18. For him to pass the test is likely.
19. *It's likely (for him) to pass the test.
20. He's likely to pass the test.
21. *The test is likely (for him) to pass.
22. That he will pass the test is likely.
23. It's likely (that) he will pass the test.
24. (For him) to pass the test is easy.
25. It's easy (for him) to pass the test.
26. *He's easy to pass the test.
27. The test is easy (for him) to pass.
28. For him to pass the test is possible.
29. It's possible (for him) to pass the test.
30. *The test is possible for him to pass.
31. *He's possible to pass the test.
32. That he will pass the test is probable.
33. *For him to pass the test is probable.
34. *He's probable to pass the test.
35. *The test is probable for him to pass.

On the preceding page you will find some example sentences illustrating several processes that apply to subject complements. The **matrix predicates** (i.e, the VPs of which the noun clauses are the subjects) are underlined in each. These predicates are:

***(be) unnecessary (be) likely seem (be) significant (be) easy (be) probable amaze someone [s.o.] (be) possible make s.o. sad***

Each of these (like all predicates – verb, noun, and adjective alike) has a special pattern of usage. The relevant variables in this pattern are the type of complement (infinitive, gerund, *that* S) allowed or required by the matrix predicate, and three rules that can apply to subject complements:

1) **Extraposition**. (1-2) is an example; extraposition moves a subject complement to the end of the sentence and leaves a dummy ***it*** to be the subject of the matrix predicate. *That* S and infinitives may be extraposed.
2) **Subject-Raising**. (18-20) is an example; subject-raising promotes the subject of an infinitive complement to be the subject of the matrix predicate, moving the remainder of the infinitive clause to the end of the sentence.
3) ***Tough*-Movement**. (25-27) is an example; *tough*-movement promotes the object of an infinitive complement to be the subject of the matrix predicate, moving the remainder of the infinitive clause to the end of the sentence.

Give syntax lab reports for each predicate, with example sentences (your own or ones from the data) for questions (1) – (3)d. Example:

Predicate: ***amaze*** *s.o* Test clause: PAST (WRITE (BILL, KK))

1) Does the predicate take a gerund complement?
   No. *Bill's having written "King Kong" amazes me.
2)a Does the predicate take a *that*-complement?
   **Yes.** That Bill wrote "King Kong" amazes me.
2)b Does the predicate take an Extraposed *that*-complement?
   **Yes.** It amazes me that Bill wrote "King Kong".
3)a Does the predicate take an infinitive complement?
   No. *For Bill to have written "King Kong" amazes me.
3)b Does the predicate take an Extraposed infinitive complement?
   No. *It amazes me (for Bill) to have written "King Kong".
3)c Does the predicate take an infinitive with Subject-Raising?
   No. *Bill amazes me to have written "King Kong".
3)d Does the predicate take an infinitive with *Tough*-Movement?
   No. *"King Kong" amazes me for Bill to have written.

Summary: Only *that* (Extraposed optionally)

1) Who he really was is still a puzzle for historians.
2) What he did was (to) put the engine in the back.
3) What he put in the back was the engine.
4) The thing he put in the back was the engine.
5) Where he put the engine was in the back.
6) The place he put the engine was in the back.
7) The place he put the engine in was the back.
8) I want to know where he put the engine.
9) I want to know wherever he puts the engine.
10) She thinks in the back is where he put the engine.
11) Wherever he put the engine, it's hard to find.
12) Whoever did it did it well.
13) The man with whom to work is Bill.
14) The man (*who(m)) to work with is Bill.
15) To Whom It May Concern:
16) To Who(m)ever It May Concern:
17) Whenever he comes home he stays with me.
18) Whoever he is, he's a criminal.
19) Whoever gets here first wins the prize.
20) I'm interested in why he did it.
21) Bill's not here, which reminds me that he was absent yesterday.
22) What fools these mortals be!
23) What a friend we have in Jesus!
24) Who steals my purse steals trash.
25) He who laughs last laughs best.
26) The problem is that he doesn't understand.
27) What the problem is is that he doesn't understand.
28) %The problem is is that he doesn't understand.

The sentences above all all have constructions that resemble both ***relative clauses*** and ***questions*** in various ways (notably the use of *wh*-words).
For each, indicate some reasons why one might wish to:

a) associate its structure with a question (i.e, view it as a kind of question, or derive it from a question by some regular process)
b) associate its structure with a relative clause (ditto)
c) treat it as a separate construction (perhaps distantly related to one or the other)

NB: In some cases there may not be much difference between (a) and (b).

For extra credit, find some other constructions like these and do the same thing with them.

# Garden Path Sentences

Below are some 'garden path' sentences. They are alike in that, when one reads them, one frequently experiences some confusion and has to restart the parse; the metaphor is 'being led down the garden path'. This can happen in several ways.

1. The prime number few.
2. Fat people eat accumulates.
3. The cotton clothing is usually made of grows in Mississippi.
4. Until the police arrest the drug dealers control the street.
5. The man who hunts ducks out on weekends.
6. When Fred eats food gets thrown.
7. Mary gave the child the dog bit a bandaid.
8. The girl told the story cried.
9. I convinced her children are noisy.
10. Helen is expecting tomorrow to be a bad day.
11. The horse raced past the barn fell.
12. I know the words to that song about the queen don't rhyme.
13. She told me a little white lie will come back to haunt me.
14. The dog that I had really loved bones.
15. That Jill is never here hurts.
16. The man who whistles tunes pianos.
17. The old man the boat.
18. Have the students who failed the exam take the supplementary.
19. The raft floated down the river sank.
20. We painted the wall with cracks.
21. The tycoon sold the offshore oil tracts for a lot of money wanted to kill JR.

For each sentence, describe the problem and the structures that contribute to it. Do the sentences fall into classes based on structural characteristics?

Be sure to notice in each case whether the garden-path phenomenon is restricted to reading, or whether it is also present when the sentence is spoken aloud.

I.e, how much of this phenomenon is automatically disambiguated by intonation, stress, and rhythm in ordinary speech?

# English Tag Questions

Among many peculiar English syntactic constructions are the so-called **Tag Questions**; some examples are given below.

1) You'll hear the bell, won't you?
2) She's gone already, isn't she?
3) She's gone already, hasn't she?
4) Hugo does love his little sister, doesn't he?
5) The children didn't know her, did they?
6) You were passing the shop yesterday, weren't you?
7) Mrs. Sheridan hasn't joined them yet, has she?
8) The telephone rings, doesn't it?
9) Mabel doesn't feel quite safe, does she?
10) His life won't be ruined so easily, will it?
11) She wouldn't really do that, would she?
12) Oh, you don't really think so, do you?

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13) Oh, you really think so, do you?
14) *Oh, you don't really think so, don't you?
15) *The telephone doesn't ring, doesn't it?
16) *You weren't passing the shop yesterday, weren't you?

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17) Your family is still back in Hungary, aren't they?
18) He ought to be back by now, shouldn't he?
19) I'm in your way again, _____ I?
20) Let's have a look, shall we?

(1)-(12) represent the more regular kind of tag question. State a rule that expresses how they are formed. You may assume that they're related to some statement, and then do things with the various parts of that statement in order to form the tags (of course, this will require you to describe the general form of a statement).

Explain why the underlined verbs in (2) and (3) are different.

Where does the does in (8) come from?

A variation of the general tag rule forms a rather different type of tag question, with a different sense, as in (13). How would you state this rule so that it allows (13), but excludes (14)-(16)?

What should go in the blank in (19)? Why is this a problem?

What problems do (17)-(20) raise for these rules?

# English Phrasal Verbs

| | | | |
|---|---|---|---|
| 1. | He looked at the picture. | He looked at it. | *He looked it at. |
| 2. | He looked for the picture. | He looked for it. | *He looked it for. |
| 3. | He looked up the picture. | *He looked up it. | He looked it up. |
| 4. | He looked over the picture. | He looked over it. | He looked it over. |
| 5. | He looked over the balcony. | He looked over it. | *He looked it over. |
| 6. | He picked out his meal. | *He picked out it. | He picked it out. |
| 7. | He picked up his sister. | *He picked up her. | He picked her up. |
| 8. | He picked at his meal. | He picked at it. | *He picked it at. |
| 9. | He picked on his sister. | He picked on her. | *He picked her on. |
| 10. | He took on the job. | *He took on it. | He took it on. |
| 11. | He took in his boss. | *He took in him. | He took him in. |
| 12. | He took off his jacket. | *He took off it. | He took it off. |
| 13. | He took to the job. | He took to it. | *He took it to. |
| 14. | He ran over the dog. | He ran over it. | He ran it over. |
| 15. | He looked out the window. | *He looked out it. | *He looked it out. |
| 16. | He took out his pocketknife. | *He took out it. | He took it out. |
| 17. | He drank up his coffee. | *He drank up it. | He drank it up. |
| 18. | He drank down his coffee. | *He drank down it. | He drank it down. |
| 19. | He wrote the paragraph over. | *He wrote over it. | He wrote it over. |
| 20. | He wrote over the paragraph. | He wrote over it. | *He wrote it over. |

A peculiar construction in English is the so-called ***phrasal verb***, which is a discontinuous morpheme composed of two parts: a **verb** and a **particle**. These particles often have the same form as prepositions, but behave quite differently from them.

Above are a few examples of sentences containing phrasal verbs and prepositional phrases. Distinguish one from the other and give your reasons for doing so. What generalizations can be made about each? Comment on any interesting phenomena.

# English Noun Phrases

1) The man is standing in the street.
2) He is standing in the street.
3) The old man is standing in the street.
4) The dirty old man is standing in the street.
5) Is the man standing in the street?
6) Is he standing in the street?
7) Is the old man standing in the street?
8) Is the dirty old man standing in the street?
9) The man with the raincoat on is standing in the street.
10) Is the man with the raincoat on standing in the street?
11) Five old men are standing here.
12) There are five old men standing here.
13) Are five old men standing here?
14) Are there five old men standing here?
15) Five old men are here.
16) There are five old men here.
17) He is here.
18) *There is he here.
19) The man is standing here.
20) *There is the man standing here.
21) A man is standing here.
22) There is a man standing here.
23) All of the five dirty old men standing in the street with raincoats on winked at him.
24) All five of the dirty old men standing in the street with raincoats on winked at him.
25) All five dirty old men standing in the street with raincoats on winked at him.
26) Did all five of the dirty old men standing in the street with raincoats on wink at him?
27) He lives in a very large two-storey red brick Tudor house.
28) *He lives in a Tudor very two-storey brick red large house.
29) The woman whom you said you wanted to go see your lawyer about after the accident is suing you.
30) Is the woman whom you said you wanted to go see your lawyer about after the accident suing you?
31) I didn't believe a boy merely ten years old could do that.
32) I didn't believe a mere ten-year-old boy could do that.
33) I saw the man who was standing in the street.
34) I saw the man standing in the street.
35) I saw the man who was in the street.
36) I saw the man in the street.
37) I saw the man who was hungry.
38) I saw the hungry man.

1)a John sent a book to Mary.
b John sent Mary a book.
c A book was sent to Mary by John.
d A book to Mary was sent by John.
e Mary was sent a book by John.

2)a John bought a book for Mary.
b John bought Mary a book.
c A book was bought for Mary by John.
d A book for Mary was bought by John.
e Mary was bought a book by John.

3)a John drove the car to Toronto.
b John drove Toronto the car.
c The car was driven to Toronto by John.
d The car to Toronto was driven by John.
e Toronto was driven the car by John.

4)a John took responsibility for Mary.
b John took Mary responsibility.
c Responsibility was taken for Mary by John.
d Responsibility for Mary was taken by John.
e Mary was taken responsibility by John.

5)a Mary fixed the car for John
b Mary fixed John the car.
c The car was fixed for John by Mary.
d The car for John was fixed by Mary.
e John was fixed the car by Mary.

The English sentences above represent several different types of con-struction, though they look very similar on the surface.

First, determine their grammaticality and award asterisks appropriately.

Then distinguish the different syntactic patterns and how they apply. You may use other data as it occurs to you.

## 4.05 ENGLISH RELATIVE CLAUSES

For each of the following sentences:

a. Bracket the relative clause.

b. Insert a caret (^) in the gap where the relative pronoun originated.

c. Underscore the head noun of the noun phrase to which the relative clause is attached.

d. Above each relative pronoun indicate its grammatical relation in its clause: SUB = subject; DO = direct object; IO = indirect object; OBL = oblique (e.g., object of preposition); PO = possessor. Insert any relative pronouns that are omitted.

(Data taken from the *Los Angeles Times*.)

EXAMPLE: This is the <u>teacher</u> [that I told you about $_{\wedge}$].
OBL

EXAMPLE: Those <u>fans</u> [who $_{\wedge}$ braved the weather] paid a price.
SUB

1. The new law has been cheered by developers and officials who have inundated prospective immigrants with investment options.

2. Armed Croatians and Serbians confront each other in Serbian enclaves of the Krajina, which has resisted Croatia's secession.

3. Activist Mike Hernandez is taking an "up-close and personal" approach that he hopes will help him win the council seat.

4. Pugnacious people on both sides use tax-deductible donations to carry on a fight that is really about values.

5. The environmental experts who conducted the study found that about one-third of the dangerous wastes are properly disposed of.

6. Without the benefits that free trade can provide, Mexico will never have enough money to clean up its environment.

7. Salinas must show good faith by using the limited resources that he has at hand to crack down now on polluters in Mexico.

8. Otherwise, environmental issues will continue to undermine the free-trade pact he so badly wants.

# Funny NPs

## Dummies:

- *there*
  There is a unicorn in the garden.
  I want there to be a unicorn in the garden.
  * I told there to be a unicorn in the garden.
- $it_{\text{Ambient}}$
  It's raining. It's cold today. It's third down and twelve.
  It seems to be raining/cold/third down and twelve.
  * I ordered it to be raining/cold/third down and twelve.
- $it_{\text{Path}}$
  It's a long way to Tipperary.
  It appears to be a long way to Tipperary.
  * It tried to be a long way to Tipperary.
- $it_{\text{Extraposition}}$
  It's too bad (that) she left. I like it *(that) he stayed.
  * It's afraid (that) she left. *I tried it (that) he stayed.

## Idiom Chunks:

- *headway*
  We've tried to make headway on the problem.
  Headway seems to have been made on the problem.
  * Headway wants to be made on the problem.
- *the beans*
  He's totally spilled the beans.
  The beans appear to have been spilled.
  * The beans tried to be spilled.
- *the cat*
  You let the cat out of the bag.
  The cat is believed to have been let out of the bag.
  * The cat claims to have been let out of the bag
- *the shit*
  The shit is about to hit the fan.
  He believes the shit to be about to hit the fan.
  * He told the shit to hit the fan.
- *X's leg*
  Watch out; she's pulling your leg.
  Your leg is altogether too easy to pull.
  * Your leg is altogether too eager to pull.
- *the bucket*
  The old man kicked the bucket last night.
  * The bucket was kicked by the old man last night.

Conclusion: **Funny NPs**[•] (dummies, idiom chunks, various others) can provide arguments for various kinds of constituent structures, since they can occur only in very highly-constrained structures. When they can occur **grammatically** elsewhere, they are evidence that they have been 'moved'; i.e, some syntactic rule has applied to separate the funny NP from its originating construction. This is analogous to the practice in biology of staining slides to show the structure of the material under the microscope.

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[•] This is a technical term. See McCawley's *The Syntactic Phenomena of English*, 2nd Ed, §3c.iii, pp.74-79.

# Levin Verb Class 9.7: *Spray/Load* Verbs and Class 9.8: *Fill* Verbs

## 09.7 *Spray/Load* Verbs (Levin 1993:117-119)

*brush cram crowd cultivate dab daub drape drizzle dust hang heap inject jam load mound pack pile plant plaster prick pump rub scatter seed settle sew shower slather smear smudge sow spatter splash splatter spray spread sprinkle spritz squirt stack stick stock strew string stuff swab vest wash wrap*

Jessica **sprayed** paint on the table.
Jessica **sprayed** (*on) the table with paint. (*Spray/Load* Alternation: 2.3.1)
Paint **sprayed** on the wall. (Causative Alternation: 1.1.2.1)
*The wall **sprayed** with paint.
Jessica **squirted/splashed/sprayed** water at me. (Conative Alternation: 1.3)
a **spray** of paint (Zero-related Nominal)
*a **spray** of the wall

Jessica **loaded** boxes on the wagon.
Jessica **loaded** (*on) the wagon with boxes.
*Boxes **loaded** on the wagon.
*The wagon **loaded** with boxes.
*Jessica **loaded/stuffed/crammed** boxes at the truck.
a **load** of boxes
*a **load** of the truck

## 09.8 *Fill* Verbs (Levin 1993:119-120)

*adorn anoint bandage bathe bestrew bind blanket block blot bombard carpet choke cloak clog clutter coat contaminate cover dam dapple deck decorate deluge dirty dot douse drench edge embellish emblazon encircle encrust endow enrich entangle face festoon fill fleck flood frame garland garnish imbue impregnate infect inlay interlace interlard interleave intersperse interweave inundate lard lash line litter mask mottle ornament pad pave plate plug pollute replenish repopulate riddle ring ripple robe saturate season shroud smother soak soil speckle splotch spot staff stain stipple stop up stud suffuse surround swaddle swathe taint tile trim veil vein wreathe*

Leslie **staffed** the store with employees.
*Leslie **staffed** employees in(to) the store.
The employees **staffed** the store.
*The store **staffed** with employees.
*Leslie **staffed** the store in employees.

Leslie **filled** the bottle with water.
*Leslie **filled** water in(to) the bottle.
The water **filled** the bottle.
The bottle **filled** with water.
*Leslie **filled** the bottle in water.

Leslie **soaked** the blanket with water.
Leslie **soaked** the blanket in water.

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Levin, Beth. 1993. *English Verb Classes and Alternations: A Preliminary Survey.* Chicago and London: The University of Chicago Press.

# 'Triggers' for Presupposition and Entailment

1. Definite Descriptions (presuppose existence)
   *John saw/didn't see **the man with two heads**.*
   → [presupposes] There exists a man with two heads
2. Factive verbs (factive verbs presuppose their complement)
   *Martha **regrets/doesn't regret** drinking John's home brew.*
   → Martha drank John's home brew.
   *Frankenstein was/wasn't **aware** that Dracula was there*
   → Dracula was there
   *John **realized/didn't realize** that he was in debt.*
   → John was in debt.
3. Implicative verbs (implicative verbs entail their complement)
   *John **managed/didn't manage** to open the door.*
   → John tried to open the door.
   *John **forgot/didn't forget** to lock the door.*
   → John ought to have locked, or intended to lock, the door.
   Others: *X **happened** to V* → *X* didn't plan or intend to *V*
   *X **avoided** Ving* → *X* was expected to, or usually did, or ought to *V*
4. Change of State verbs (COS (inchoative) verbs refer to two successive states)
   *Bill **stopped/didn't stop** smoking kreteks.*
   → Bill had been smoking kreteks.
   *Joan **began/didn't begin** to enjoy herself.*
   → Joan hadn't been enjoying herself.
   *Kissinger **continued/didn't continue** to rule the world.*
   → Kissinger had been ruling the world.
   Others: *start, finish, carry on, cease, leave, enter, come, go, arrive,* etc.
5. Iteratives (iterative verbs refer to repetitions of the same event)
   *The flying saucer landed/didn't land **again**.*
   → The flying saucer landed before.
   *You can't get gobstoppers **anymore**.*
   → You once could get gobstoppers.
   *You **used to** be able to get gobstoppers.*
   → You can't get gobstoppers now.
   *Carter **returned** to power.*
   → Carter was once in power.
   Others: *another time, to come back, restore, repeat, for the $n^{th}$ time,* etc.
6. Verbs of Judging (judging verbs refer to participants, events and their evaluation)
   *Agatha **accused/didn't accuse** Ian of running away.*
   → (Agatha thinks) running away is wrong.
   *Agatha **criticized/didn't criticize** Ian for running away.*
   → (Agatha thinks) Ian ran away.

'Triggers' for Presupposition and Entailment

7. Temporal clauses (subordinate clauses introduced by temporal conjunctions)
   ***Before*** *he died, Frege had/hadn't written about presuppositions.*
   →Frege died.
   ***While*** *Bill was looking for the receipt, Mary continued work on the form.*
   → Bill was looking for the receipt for some period of time.
   ***Since*** *Carter left office, the White House menu hasn't had peanuts on it.*
   → Carter left office.
   Others: *after, during, whenever, as* (as in *As he was getting up, he slipped*), etc.
8. Cleft sentences (*It be* NP *that* VP) / Pseudo-Cleft sentences (*Wh-* VP *be* NP)
   ***It was/wasn't*** *Rosie* ***that*** *kissed Henry.*
   → Someone kissed Henry.
   ***What*** *John lost/didn't lose* ***was*** *his wallet.*
   → John lost something.
9. Comparison and contrast (presuppose baseline propositions;
   ***as…as***: equative; ***more/-er***: comparative; ***most/-est***: superlative)
   *Barbara is/isn't a* ***better*** *singer* ***than*** *Carol.*
   → Carol is a singer.
   *That idea is/isn't* ***as*** *ridiculous* ***as*** *Bill's suggestion.*
   → Bill's suggestion is ridiculous.
10. Relative clauses (presuppose identificational baseline propositions)
    *The man* ***that you want to see*** *is/isn't too busy.*
    → You want to see some man. [restrictive]
    *The Harrappans, who flourished 2800-2650 BCE, were/weren't great architects.*
    → The Harrappans flourished 2800-2650 BCE. [non-restrictive]
11. Counterfactual conditionals (presuppose negation of baseline propositions)
    *If Hannibal had only had twelve more elephants, the Romance Languages would not exist today.*
    → Hannibal didn't have twelve more elephants.
    *If the notice had only said 'Mine Field' in English as well as Welsh, we wouldn't have lost poor Llewellyn.*
    → The notice didn't say 'Mine Field' in English (though it **did** say 'Mine Field' in Welsh).
12. Questions (presuppose baseline propositions)
    *Is Newcastle in England or is it in Australia?*
    → Newcastle is in England or Newcastle is in Australia.
    *Who is the Chair of Linguistics at MIT?*
    → Someone is the Chair of Linguistics at MIT.
    *When does the fat lady sing?*
    → The fat lady sings at some time.

# English Irregular Verbs

| Infinitive | Past | Past Participle |
|---|---|---|
| *awake* | *awoke* | *awoken* |
| *be* | *was, were* | *been* |
| *bear* | *bore* | *born* |
| *beat* | *beat* | *beat* |
| *become* | *became* | *become* |
| *begin* | *began* | *begun* |
| *bend* | *bent* | *bent* |
| *beset* | *beset* | *beset* |
| *bet* | *bet* | *bet* |
| *bid* | *bid/bade* | *bid/bidden* |
| *bind* | *bound* | *bound* |
| *bite* | *bit* | *bitten* |
| *bleed* | *bled* | *bled* |
| *blow* | *blew* | *blown* |
| *break* | *broke* | *broken* |
| *breed* | *bred* | *bred* |
| *bring* | *brought* | *brought* |
| *broadcast* | *broadcast* | *broadcast* |
| *build* | *built* | *built* |
| *burn* | *burned/burnt* | *burned/burnt* |
| *burst* | *burst* | *burst* |
| *buy* | *bought* | *bought* |
| *cast* | *cast* | *cast* |
| *catch* | *caught* | *caught* |
| *choose* | *chose* | *chosen* |
| *cling* | *clung* | *clung* |
| *come* | *came* | *come* |
| *cost* | *cost* | *cost* |
| *creep* | *crept* | *crept* |
| *cut* | *cut* | *cut* |
| *deal* | *dealt* | *dealt* |
| *dig* | *dug* | *dug* |
| *dive* | *dived/dove* | *dived* |
| *do* | *did* | *done* |
| *draw* | *drew* | *drawn* |
| *dream* | *dreamed/dreamt* | *dreamed/dreamt* |
| *drive* | *drove* | *driven* |
| *drink* | *drank* | *drunk* |
| *eat* | *ate* | *eaten* |
| *fall* | *fell* | *fallen* |
| *feed* | *fed* | *fed* |
| *feel* | *felt* | *felt* |
| *fight* | *fought* | *fought* |

| Infinitive | Past | Past Participle |
|---|---|---|
| *find* | *found* | *found* |
| *fit* | *fit* | *fit* |
| *flee* | *fled* | *fled* |
| *fling* | *flung* | *flung* |
| *fly* | *flew* | *flown* |
| *forbid* | *forbade* | *forbidden* |
| *forget* | *forgot* | *forgotten* |
| *forego (forgo)* | *forewent* | *foregone* |
| *forgive* | *forgave* | *forgiven* |
| *forsake* | *forsook* | *forsaken* |
| *freeze* | *froze* | *frozen* |
| *get* | *got* | *got/gotten* |
| *give* | *gave* | *given* |
| *go* | *went* | *gone* |
| *grind* | *ground* | *ground* |
| *grow* | *grew* | *grown* |
| *hang* | *hung* | *hung* |
| *hear* | *heard* | *heard* |
| *hide* | *hid* | *hidden* |
| *hit* | *hit* | *hit* |
| *hold* | *held* | *held* |
| *hurt* | *hurt* | *hurt* |
| *keep* | *kept* | *kept* |
| *kneel* | *knelt* | *knelt* |
| *knit* | *knit* | *knit* |
| *know* | *knew* | *know* |
| *lay* | *laid* | *laid* |
| *lead* | *led* | *led* |
| *leap* | *leaped/lept* | *leaped/lept* |
| *learn* | *learned/learnt* | *learned/learnt* |
| *leave* | *left* | *left* |
| *lend* | *lent* | *lent* |
| *let* | *let* | *let* |
| *lie* | *lay* | *lain* |
| *light* | *lighted/lit* | *lighted* |
| *lose* | *lost* | *lost* |
| *make* | *made* | *made* |
| *mean* | *meant* | *meant* |
| *meet* | *met* | *met* |
| *misspell* | *misspelled/~spelt* | *misspelled/~spelt* |
| *mistake* | *mistook* | *mistaken* |
| *mow* | *mowed* | *mowed/mown* |
| *overcome* | *overcame* | *overcome* |

# English Irregular Verbs

| Infinitive | Past | Past Participle |
|---|---|---|
| *overdo* | *overdid* | *overdone* |
| *overtake* | *overtook* | *overtaken* |
| *overthrow* | *overthrew* | *overthrown* |
| *pay* | *paid* | *paid* |
| *plead* | *pled* | *pled* |
| *prove* | *proved* | *proved/proven* |
| *put* | *put* | *put* |
| *quit* | *quit* | *quit* |
| *read* | *read* | *read* |
| *rid* | *rid* | *rid* |
| *ride* | *rode* | *ridden* |
| *ring* | *rang* | *rung* |
| *rise* | *rose* | *risen* |
| *run* | *ran* | *run* |
| *saw* | *sawed* | *sawed/sawn* |
| *say* | *said* | *said* |
| *see* | *saw* | *seen* |
| *seek* | *sought* | *sought* |
| *sell* | *sold* | *sold* |
| *send* | *sent* | *sent* |
| *set* | *set* | *set* |
| *sew* | *sewed* | *sewed/sewn* |
| *shake* | *shook* | *shaken* |
| *shave* | *shaved* | *shaved/shaven* |
| *shear* | *shore* | *shorn* |
| *shed* | *shed* | *shed* |
| *shine* | *shone* | *shone* |
| *shoe* | *shoed* | *shoed/shod* |
| *shoot* | *shot* | *shot* |
| *show* | *showed* | *showed/shown* |
| *shrink* | *shrank* | *shrunk* |
| *shut* | *shut* | *shut* |
| *sing* | *sang* | *sung* |
| *sink* | *sank* | *sunk* |
| *sit* | *sat* | *sat* |
| *sleep* | *slept* | *slept* |
| *slay* | *slew* | *slain* |
| *slide* | *slid* | *slid* |
| *sling* | *slung* | *slung* |
| *slit* | *slit* | *slit* |
| *smite* | *smote* | *smitten* |
| *sow* | *sowed* | *sowed/sown* |
| *speak* | *spoke* | *spoken* |
| *speed* | *sped* | *sped* |

| Infinitive | Past | Past Participle |
|---|---|---|
| *spend* | *spent* | *spent* |
| *spill* | *spilled/spilt* | *spilled/spilt* |
| *spin* | *spun* | *spun* |
| *spit* | *spit/spat* | *spit* |
| *split* | *split* | *split* |
| *spread* | *spread* | *spread* |
| *spring* | *sprang/sprung* | *sprung* |
| *stand* | *stood* | *stood* |
| *steal* | *stole* | *stolen* |
| *stick* | *stuck* | *stuck* |
| *sting* | *stung* | *stung* |
| *stink* | *stank* | *stunk* |
| *stride* | *strod* | *stridden* |
| *strike* | *struck* | *struck* |
| *string* | *strung* | *strung* |
| *strive* | *strove* | *striven* |
| *swear* | *swore* | *sworn* |
| *sweep* | *swept* | *swept* |
| *swell* | *swelled* | *swelled/swollen* |
| *swim* | *swam* | *swum* |
| *swing* | *swung* | *swung* |
| *take* | *took* | *taken* |
| *teach* | *taught* | *taught* |
| *tear* | *tore* | *torn* |
| *tell* | *told* | *told* |
| *think* | *thought* | *thought* |
| *thrive* | *thrived/throve* | *thrived* |
| *throw* | *threw* | *thrown* |
| *thrust* | *thrust* | *thrust* |
| *tread* | *trod* | *trodden* |
| *understand* | *understood* | *understood* |
| *uphold* | *upheld* | *upheld* |
| *upset* | *upset* | *upset* |
| *wake* | *woke* | *woken/waked* |
| *wear* | *wore* | *worn* |
| *weave* | *weaved/wove* | *weaved/woven* |
| *wed* | *wed* | *wed* |
| *weep* | *wept* | *wept* |
| *wind* | *wound* | *wound* |
| *win* | *won* | *won* |
| *withhold* | *withheld* | *withheld* |
| *withstand* | *withstood* | *withstood* |
| *wring* | *wrung* | *wrung* |
| *write* | *wrote* | *written* |

## Class I Adverbial Subordinating Conjunctions and Conjunction Phrases

*after*
*although*
*as if*
*as though*
*as long as*
*as much as*
*as soon as*
*as far as*
*inasmuch as*
*insofar as*
*because*
*before*
*even if*
*even though*
*how*
*if*
*lest*
*no matter how*
*once*
*since*
*in that*
*in case*
*in order [that]*
*now that*
*so [that]*
*provided [that]*
*supposing [that]*
*given [that]*
*than*
*though*
*till*
*unless*
*until*
*when*
*whenever*
*where*
*wherever*
*whether*
*while*
*why*
...

## Class II Adverbial Subordinating Conjunctions and Conjunction Phrases

*also,*
*anyway,*
*as we were saying,*
*consequently,*
*finally,*
*first,*
*fortunately,*
*furthermore,*
*hence,*
*hopefully,*
*however,*
*ideally,*
*in spite of this,*
*incidentally,*
*indeed,*
*instead,*
*like,*
*likewise,*
*meanwhile,*
*moreover,*
*nevertheless,*
*next,*
*nonetheless,*
*now,*
*on the other hand,*
*otherwise,*
*regrettably,*
*regrettably,*
*second,*
*similarly,*
*so,*
*still,*
*surprisingly,*
*thankfully,*
*then,*
*therefore,*
*thus,*
*unfortunately,*
*well,*
*wherever we go,*
...

# 'Verbing'

Below are two lists of infinitive verb phrases. In each class, the verb is formed from a noun; as Calvin once said, *Verbing weirds language.* But verbs differ in what they mean, and occasionally in which class they belong to.

What is the basic difference between Class I and Class II?

| Class I | Class II |
|---|---|
| *to* ***seed*** *the lawn* | *to* ***seed*** *a pepper* |
| *to* ***top*** *a building* | *to* ***top*** *the tree* |
| *to* ***water*** *horses* | *to* ***milk*** *a cow* |
| *to* ***oil*** *machinery* | *to* ***worm*** *the dog* |
| *to* ***wire*** *the house* | *to* ***peel*** *an orange* |
| *to* ***carpet*** *a room* | *to* ***core*** *apples* |
| *to* ***cap*** *the bottle* | *to* ***skin*** *a cat* |
| *to* ***fence*** *property* | *to* ***scalp*** *the man* |
| *to* ***wax*** *the floor* | *to* ***husk*** *corn* |
| *to* ***roof*** *a house* | *to* ***sample*** *wine* |
| … etc. | … etc. |

Find five more examples of each class,
and explain why each one is an example of its class.

## Negative Polarity Items
(illustrated with *not*)

I *(don't) have ***any***.
[but **NOT** *any* as Subject, e.g, ***Anyone*** *can do that*, which is Modal Polarity.]
I *(don't) ***ever*** see him. [*ever* = **anywhen*]
He would*(n't) ***budge***.
He did*(n't) have a ***red cent***.
He has*(n't) been here ***in weeks/ages/the longest time***.
He may *(not) arrive ***until*** noon.
[*until* with punctual predicates]
I *(don't) have ***much*** time left.
I *(don't) have ***many*** days left.
He has*(n't) arrived ***yet***.
You ***need***(n't ) stare at him.
We ***dare*** *(not) disturb him.
[*need* & *dare* as modals]
I *(don't) like that ***at all***.
It's *(not) that easy ***any more***.
He's *(not) ***all that*** smart.
[*be all that* + adjective/adverb]
He's *(not) ***too*** bright. [*too* = *very*]
*(Don't) ***bother to*** close/clos***ing*** the door.
That should*(n't) ***last long, be long, take long***. [but **NOT** *a long time*]
I ***can****('t) ***seem to*** understand him.
I ***would****(n't) ***care to*** fight with her.
I ***would****(n't) ***mind*** fight***ing*** with her.
I *(don't) know ***but that/what*** he's right.
They *(don't) ***drink a drop, do a thing, give a damn/shit, lift a finger, bat an eye, eat a bite***, ... [V+minimal D.O.]
They ***can****('t) ***help*** them***selves***.
They ***can****('t) ***help*** think***ing*** of that.
I saw *(no) people there ***to speak of***.

---

* Asterisk before a sentence indicates ungrammaticality. Parentheses indicate optional material that can be omitted. Asterisk before parenthesis indicates that the elements inside the parentheses are obligatory and **cannot** be omitted. Asterisk after parenthesis indicates that the elements inside the parentheses are ungrammatical and **must** be omitted.

## Negative 'Triggers'
(illustrated with *any*)

I. **Overt negatives:**

A. ***not*** [w/ NPI clausemate or complement]
He did*(***n't***) know anybody.
He did*(***n't***) claim (that) he knew anybody.
He did*(***n't***) think (that) he knew anybody.

B. **Incorporated negatives**
I ***doubt*** (that) he knows anybody.
It's ***unlikely*** (that) he knows anybody.
It's ***improbable*** (that) he knows anybody.
He ***dislikes*** anybody('s) reminding him.
He ***prevented*** her (from) seeing anyone.
I ***kept*** her ***from*** telling anybody.

C. **Negative frequency adverbs**
I ***seldom/rarely*** see any of them.
He ***hardly/scarcely*** knows anyone.

D. **Quantifiers & quantified adverbs**
***Only*** Bill did any of the homework.
(*A) ***Few*** people see any use for it.

II. **Questions** (overt and embedded)
Did you see anybody?
How does anybody stand this?
I wonder how anybody stands this.

III. **Hypothetical clauses**
Tell me ***if*** you see anyone.
He asked ***whether*** I saw anyone.
Tell me ***whatever*** anybody says.
Check the list again, ***lest*** we forget anyone.
I'll read it aloud, ***unless*** anyone objects.

IV. **Comparatives, superlatives, etc.**
There's ***more/less*** here than anybody knew.
He ***prefers*** beer to any other drink.
He'***d rather*** die than hurt anyone.
He's ***as*** good ***as*** anyone expected.
He's the fast***est*** one (that) anybody knows of.
I saw him ***before*** anybody (did).
I'm ***surprised*** (that) he knows anybody.
It's ***too*** dark to recognize anything.
He left ***without*** anybody noticing (it).
That's ***hard*** for anybody to do.

# NPI Squish

Below are 42 sentences constructed using the 6 negative triggers ***whether, would rather, seldom, not, too,*** and ***only,*** and the 7 negative polarity items ***any more, ever, in weeks, take long, at all, yet,*** and ***until*** (w/ punctual verb). Not all are grammatical; is there any pattern?

HINT: Try using a 6-by-7 grid. Maximum 1 page.

1) *He's seldom ever eaten a mango.*
2) **He would rather listen to Bach than The Beatles any more.*
3) **Only Bill thinks it'll take long.*
4) *He hasn't slept at all.*
5) **We want to find out whether they arrived until noon.*
6) **He'd rather watch TV than finish it yet.*
7) *?He's seldom been here in weeks.*
8) *He's been too nervous to sleep at all.*
9) *He has not ever eaten a mango.*
10) *He seldom sleeps during the day at all.*
11) *Only Bill has ever eaten a mango.*
12) *We have to find out whether they've finished yet.*
13) *?He would rather pace the room than sleep at all.*
14) *It seldom takes long.*
15) *They didn't arrive until noon.*
16) *I need to know whether he has slept at all.*
17) **Only Bill arrived until noon.*
18) *Tell me whether he's ever eaten a mango.*
19) *?Only Bill got to sleep at all.*
20) *Bill doesn't buy his suits there any more.*
21) **Only Bill has been home in weeks.*
22) *They haven't finished the paper yet.*
23) **He's been too angry to see her in weeks.*
24) *He would rather go hungry than ever eat a mango.*
25) *He is seldom finished yet at this time of day.*
26) *He's too picky to ever eat a mango.*
27) **They would rather be late than arrive until noon.*
28) *He's too lazy to have finished yet.*
29) *He hasn't been home in weeks.*
30) **We have to find out whether he's been home in weeks.*
31) *?Only Bill has finished yet.*
32) *He seldom buys his suits here any more.*
33) *He's too poor to buy his suits there any more.*
34) *We have to find out whether he buy his suits there any more.*
35) *?Only Bill buys his suits there any more.*
36) *This procedure won't take long to do.*
37) *It's too simple to take long.*
38) *We need to know whether it will take long.*
39) **He would rather forget about it than take long.*
40) *He seldom arrives until noon.*
41) *?He's too slow to arrive until noon.*
42) **She would rather flunk than study in weeks.*

# Negative-Raising

1. Bill thought that Frank wouldn't pass the exam.
2. Bill didn't think that Frank would pass the exam.
3. Bill bet that Frank wouldn't pass the exam.
4. Bill didn't bet that Frank would pass the exam.
5. Bill expected that Frank wouldn't pass the exam.
6. Bill didn't expect that Frank would pass the exam.
7. Bill claimed that Frank wouldn't pass the exam.
8. Bill didn't claim that Frank would pass the exam.
9. Bill knew that Frank wouldn't pass the exam.
10. Bill didn't know that Frank would pass the exam.
11. Bill realized that Frank wouldn't pass the exam.
12. Bill didn't realize that Frank would pass the exam.
13. Bill wanted [Frank] not to pass the exam.
14. Bill didn't want [Frank] to pass the exam.
15. Bill told Frank not to pass the exam.
16. Bill didn't tell Frank to pass the exam.
17. Bill needed [(for) Frank] not to pass the exam.
18. Bill didn't need [(for) Frank] to pass the exam.
19. Bill is sorry that Frank didn't pass the exam.
20. Bill isn't sorry that Frank passed the exam.
21. Bill is eager not to pass the exam.
22. Bill isn't eager to pass the exam.
23. Bill intends not to pass the exam.
24. Bill doesn't intend to pass the exam.
25. The exam is hard [for Bill] not to pass.
26. The exam isn't hard [for Bill] to pass.

In the sentence pairs above, each odd-numbered sentence has a negative in a subordinate complement, while the even-numbered sentences have a negative in the main clause. Some of these pairs are synonymous, but some aren't. The difference is due to the meaning of the matrix predicate; some predicates are "transparent" to negation, and mean the same thing whether the negative is upstairs or downstairs – this is called "Negative-Raising" – but others are "opaque" to negation and mean very different things under these circumstances.

- Find 5 other matrix predicates of each kind; provide example pairs.
- In general, what kinds of predicate meanings are transparent to negation?

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# The Editorial Eye

Focusing on Publications Standards, Practices, and Trends

## Making the Point with Metaphors: Not Just for Poets

BY JOHN LAWLER

INSIDE



Twenty-five years ago at Berkeley, a linguistics professor and a visiting philosopher began a little book with the following words:

> Metaphor is for most people a device of the poetic imagination and the rhetorical flourish—a matter of extraordinary rather than ordinary language. Moreover, metaphor is typically viewed as characteristic of language alone, a matter of words rather than thought or action. For this reason, most people think they can get along perfectly well without metaphor. We have found, on the contrary, that metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature.

The book, *Metaphors We Live By* (University of Chicago Press), has sold briskly ever since and is still in print. It was the right book at the right time; a year later, a *Village Voice* article credited the authors, George Lakoff (the linguist) and Mark Johnson (the philosopher), with starting a publishing boom in books about metaphor. George Lakoff (now billed as a cognitive scientist) has once again hit the best-seller lists with another little book, *Don't Think of an Elephant!* (Chelsea Green Publishing, White River Junction, VT), which deals with the power of metaphor (now called *framing*) in the American political process.

In the quarter-century between these two little books, the cognitive processes collectively and variously known as *metaphor, schemas, simile, analogy,* or *framing* (depending on one's theoretical bent) have surfaced again and again in places where they hadn't been expected. Why should the average communicator care? Because metaphor's ability to direct attention and convey ideas subliminally is simple, powerful, and universal—and it's impossible to avoid noticing it in action everywhere, once you're attuned to it. Your favorite writers already understand this, which is why they're your favorites.

### Metaphors we compute by

A case in point can be found in the single most significant technological development of the last quarter-century: the advent of the personal computer. There were personal computers in 1980, but they were simply smaller versions of mainframe computers (remember DOS?). However, this was about to change. The Macintosh was under development when *Metaphors We Live By* came out; copies were obtained for the

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◄ from page 1

development team, and the *desktop* metaphor began to enter conversations. The result was historic, to say the least.

The desktop revolution was not, of course, completely due to the efforts of Lakoff and Johnson; ideas like this were in the air all around computerland, and still are—which is hardly surprising, since computers were straightforwardly designed to *be* metaphors. The original impetus behind computing was the attempt to subcontract human brain labor to a machine by building a sort of a model of what the brain does in calculating. This led, in turn, to a whole new set of experiences with computing and the consequent need to talk about them.

But because there were no traditional ways to talk about these new experiences, the entire computing enterprise became a hothouse for metaphors. Exotic blooms are continually being pulled in from elsewhere and assigned new metaphorical meanings: *editor, file, folder, spreadsheet, hacking, jump drive, slide show, the Net, the Web, surfing, spam, overflow, virus, worm, cut-and-paste, cyberspace, garbage, troll, wizard* ... the list goes on. And changes constantly, like any living thing.

This is just one area where recent technology has reframed our language use. We now, for instance, have to use retro-qualifications like *acoustic guitar, analog watch,* and *brick-and-mortar store* to indicate what used to be understood simply as a *guitar, watch,* and *store*; and we will soon need a good term for a camera that uses film instead of a CCD (charge-coupled device).

## Life, the universe, and everything

But it's not just technology, though that's the clearest, most obvious recent case. It's always been the case that people use metaphors to talk about difficult ideas by taking terms from common experiences and situations (*frames*, in the trade) and using them in different contexts (*frame mapping*) to mean different things. Thus, while the concept of time is something we talk about all the time, we rarely use words that are exclusively temporal to do so; indeed, only half a dozen or so English words refer exclusively to time: *now, then, when, during, duration, endure.* Instead, we talk about time using two major *metaphor themes*: TIME IS MONEY (*save an hour, spend an hour, waste an hour, lose an hour, thank you for your time*) and TIME IS SPATIAL (*before, after, a long time, a short while, from 9 to 5, look forward to, see it coming, put it behind you*). It's difficult, if not impossible, to discuss time in English without using these metaphor themes, which are standard resources for everybody.

TIME is not the only human imponderable that metaphors help with. When one talks about *being enchanted by, falling in love with,* or *being crazy about* somebody, one is using metaphor themes—respectively, LOVE IS MAGIC, LOVE IS OUT OF CONTROL, and LOVE IS MADNESS (a subtype of LOVE IS OUT OF CONTROL)—to talk about humanity's favorite mystery. Less heady forms of love, such as long-term relationships, use themes like LOVE IS A JOURNEY (*at a crossroads, a dead-end relationship, not going anywhere, on the rocks,* and Freud's famous railroad/tunnel symbols).

And then there are science and math. All scientific theories and all of mathematics are metaphors—very complex and carefully worked-out metaphors, but metaphors nonetheless. Maxwell's equations, for instance, which describe the properties of electricity and magnetism, were swiped wholesale from hydrodynamic equations of fluid motion, as in ELECTRICITY IS A LIQUID,


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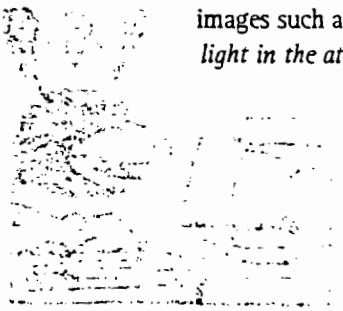
whence also electrical terms such as *current*, *flux*, *conduction*, and *juice*.

Math is based on numbers, which are based on the process of counting, which comes from the oldest human activity: collection of resources, typically food—the *gathering* part of *hunting and gathering* societies. (It's recently been established, incidentally, that the part of the brain involved in counting and mathematics is precisely that part that controls the hands, also used in gathering.) This is why people have trouble understanding negative numbers if they've been taught subtraction as *5 take away 2 leaves 3*; to them, *2 take away 5 leaves minus 3* makes no sense at all—until they learn a metaphor different from the *gathering* one.

## Seeing is believing

Finally, religion and philosophy grow by the accretion and elaboration of metaphors, just like other branches of human knowledge and activity. It's easy to see animistic religion as just the personification of natural forces such as lightning, rain, and sun; what's not so obvious is how metaphorical the bases of recent successful religions are. Christianity, for instance, is permeated by the concept of LIGHT. Saints and holy people glow with halos; Christ repeatedly uses actinic metaphors like *the Light of the World*; a convert is said to have *seen the light*, and so on.

This is a very old metaphor, traceable to prehistoric times and beyond. In Proto-Indo-European—the reconstructed language ancestral to Indic, Iranian, and European languages, including English—the root **vid-*, which is the source of the English words *wit*, *wise*, and *wisdom*, is also the source of *video* and *vision* (from Latin) and *idea* (from Greek). The basic idea (pardon the expression) is that THINKING IS SEEING and, therefore, THOUGHT IS A LIGHT MEDIUM. This comes through very clearly in the Sanskrit word *Veda*, the name of the holiest of Hindu holy works, which also comes from **vid-* and means, literally, *wisdom*. This metaphor is well established in our culture, too, as can be seen from the phrases *it dawned on me*, *I see what you mean*, *a brilliant idea*, or *terminally dim*. Not to mention the picture of a lightbulb over a cartoon character, or the meaning of images such as *the light in the attic*.



Buddhism, by contrast, is based on the metaphor of WAKING UP; in fact, *Buddha* means "The One Who Woke Up," a reference to his meditation that resulted in *Setting in Motion the Wheel of the Law*, as his first sermon came to be called. This theme is responsible for Buddhism's emphasis on meditation and consciousness; the basic concept here is that most people are asleep, just reacting, driven by unconscious desires, and they need to wake up and take conscious control of their appetites and actions. This is, in fact, quite similar to Christian moral ideas, as there's a strong coherence between the metaphors of LIGHT and WAKING CONSCIOUSNESS: light comes in the daytime and wakes us up; when we're awake, we can see things in the light and behave consciously—and morally.

## Ontology recapitulates physiology

At their root, all these metaphors (and the many thousands of others that make up our cognitive systems) have one thing in common—the only thing that all humans have in common, and thus the only thing everyone can understand experientially: the human body. Our metaphoric concept of COUNTING comes ultimately from a grasping hand, THINKING from a perceiving eye, MARRIAGE from a couple setting out together on a long journey, and so forth.

This is perhaps the most significant discovery of cognitive science in the past 25 years: that abstract knowledge proceeds ultimately from metaphoric extensions of human physiological perception and motor programs. In short, THE MIND is a metaphor—a metaphor, in fact, of THE BODY.

The mind/body problem has been solved; and with its solution comes a realization, in cognitive terms, of what great writers have always understood—that we have no choice in the matter: We *have* to use metaphors to understand the world around us. We expect others to use them, too; we depend on those others to suggest metaphoric ways we can use to do that, and these understandings are most powerful and empowering when they are couched in themes drawn from the human body and its (our) experiences. No writer can afford to be ignorant of these facts. ◆

John Lawler is a linguist at the University of Michigan, where he studies metaphor, writes about grammar, and teaches writing. For details, see www.umich.edu/~jlawler/bio.pdf. And watch for his new grammar column in the May issue.

# Metaphor

"... understanding one thing in terms of another" — Lakoff & Johnson

Three levels of meaning for the term *metaphor*:

- ***Metaphor***: a phenomenon of human Language and Cognition
- ***Metaphor Theme***: an individualized symbolic pattern in a language (e.g, *TIME is MONEY* in English)
- ***Instantiations*** of metaphor themes: (e.g, *I spent an hour.*)

Some metaphor themes:

1) *TIME is MONEY* A *Metaphor Theme* that licenses English speakers to refer to their experience of **duration** with words defined in terms of the commercial exchange of valuable resources, i.e, **money**:

I *spent* **thirty hours** on that job.
I *spent* **thirty dollars** on that lamp.

I *lost* **quite a bit of time** in the traffic jam.
I *lost* **quite a bit of money** in the casino.

I *saved* **a few minutes** by taking the shortcut.
I *saved* **a few dollars** by painting it myself.

That *cost* him **two years** of his life.
That *cost* him **two million dollars** of his money.

I thought that was *worth* the time it took.
I thought that was *worth* the money it cost.

I *contributed* **a lot of time** to charity.
I *contributed* **a lot of money** to charity.

a) What counts as what in the metaphor theme?

| e.g, | *TIME* | *MONEY* |
|---|---|---|
| | (amounts of) **time** | (amounts of) **money** |
| | state or event **experienced** | commodity **purchased** |
| | (human) **experiencer** | (human) **purchaser** |
| | *[no equivalent]* | (human) **seller** |

b) What <u>doesn't</u> work?

e.g, *I *paid* thirty **hours** for that job. (because *pay* refers to seller)

c) How <u>else</u> do we refer to time?

1)a *TIME is SPACE:* A metaphor theme that licenses English speakers to refer to temporal phenomena with words and expressions defined in terms of (their experience of linear motion in) space.

| e.g, | | |
|---|---|---|
| | a *long/short* time | be<u>fore</u>/<u>after</u> |
| | put it *behind* you | look *forward* to it |
| | years *passing* | the *coming* weeks |
| | at this *point* in time | |

# Metaphor

2) *What's UP?* English speakers (like all humans) are oriented vertically with respect to a gravitational field, so the *up/down* dimension is significant, and English uses it in a variety of metaphor themes. All of them are coherent, i.e, we tend to think of them in the same ways (e.g, *LESS, SAD, WEAK, PASSIVE,* and *WORSE* are all negative evaluations, and vice versa.)

a) *UP is MORE (DOWN is LESS):*

The prices are *rising/falling.*
The stockmarket's *moving up/crashing.*
Turn the volume *up/down.*

b) *UP is HAPPY (DOWN is SAD):*

He's *depressed.*
feeling *up/down*
What a *downer*!

c) *UP is POWERFUL (DOWN is WEAK):*

*upper/lower* classes
*superior/subordinate*
the *highest levels* of the government
*oppressed* masses

d) *UP is ACTIVE (DOWN is PASSIVE):*

The computer is *up/down.*
Are you *up* for some handball?
*Rise* to the occasion.

e) *UP is BETTER (DOWN is WORSE):*

*higher/lower* animals
He *fell down* on the midterm.
a *rise/fall* in performance
aim *high*
*upwardly*-mobile

f) *UP is ABSTRACT (DOWN is CONCRETE):*

He's got his *head in the clouds.*
He's got his *feet on the ground.*
Come *back to earth.*
*higher* mathematics
*high-level* cognitive functions
*low-level* details
new *heights* of abstraction
*down-to-earth* solution

# Metaphor

We know almost nothing about the human mind, yet we talk about thoughts and beliefs and emotions constantly, and have thousands of words in every language that refer to the mind. Such a concept is a good candidate for a metaphor, and indeed there are several big themes in English that purport to inform us what "The Mind" is.

One example is already provided for each of the following metaphor themes.
**Find 5 more examples for each.**
Ideally, you should listen/watch for them in others' speech or writing.

1) *THOUGHT is LIGHT; KNOWING is SEEING*
   That's a *bright* idea; I *see* what you mean.
2) *THE MIND is A CONTAINER*
   He has a pretty *closed* mind.
3) *THE MIND is A PLACE*
   That thought had *crossed* my mind.

*THE MIND is A HOUSE* is a specific combination of all of the themes above. A house is a **place**, and is a **container** as well. More importantly, it is a container for **people**, who are implicated in the first theme as being the ones who do seeing, and therefore thinking. This, in turn, is coherent with the theory of thought and consciousness which attributes one's inner experience to a **homunculus** (Latin, 'little man') inside one's mind. As a scientific theory, this is a bust, since it just raises the question of what's inside the homunculus's mind, and so ad infinitum; but as a satisfying explanation for why we do what we do, it has a long history.

---

Other metaphor themes are found in other contexts. For some more examples, in a novel context, point your browser at:

http://www-personal.umich.edu/~jlawler/meta4compute.html

# The Conduit Metaphor

A very important metaphor theme in English is called the **Conduit Metaphor**. This theme is present in the vast majority of English expressions that refer to communication, speech, language, or meaning. It is important to be able to recognize instances of the Conduit Metaphor, because many communicational pathologies are based on it.

The Conduit Metaphor refers to communication, to language use.
It consists of several coherent parts:

a) WORDS AND THEIR MEANINGS (or IDEAS) ARE BOTH OBJECTS

b) WORDS ARE CONTAINERS FOR IDEAS, FILLED BY THE SPEAKER

c) COMMUNICATION IS TRANSMITTING WORDS IN SENTENCES;
LISTENERS UNDERSTAND THE MEANING BY UNPACKING THE CONTAINERS

For instance, in (1) that idea is conceived of as bridging some physical gap between the speaker and the listener, as the use of *get across to* shows:

(1) It's hard to get that idea across to him.

Instead, one might say (2), which doesn't make use of the Conduit Metaphor:

(2) It's hard to make him understand that idea.

Here are some other examples of the Conduit Metaphor.
For each, construct an equivalent paraphrase that **doesn't** use that theme.

(3) His promises were hollow.

(4) There isn't a single good idea in that book.

(5) He conveys his desires very effectively.

(6) I didn't get anything out of that lecture.

(7) He got the idea out of an old novel.

(8) You've got to get more meaning into fewer words.

---

**Hint**: Be very careful of using the words ***in*** or ***into***,
or any word that refers to the same thing, like ***contain***.

# Grice's Maxims

## The Rules of Cooperative Conversation
(from H.P. Grice, "The Logic of Conversation")

### Maxims of **Quantity**

1. Make your contribution as informative as is required.
2. Do not make your contribution more informative than is required.

### Maxims of **Quality**

1. Do not say what you believe to be false.
2. Do not say that for which you lack adequate evidence.

### Maxims of **Manner**

1. Avoid obscurity of expression.
2. Avoid ambiguity.
3. Be brief.
4. Be orderly.

### Maxim of **Relation**

1. Be relevant.

Like many rules of human behavior, Grice's Maxims are idealized, and often violated in practice. Find violations of each maxim and characterize them in a short (2-pg **maximum**) essay. Questions to consider include:

- Are some violations more common than others? Why?
- Are some more common in writing than in speech? Why?
- Are some more common in computer-mediated communication? Why?

# An Ontology for English Verbs of Cutting

| | | | | | |
|---|---|---|---|---|---|
| *butcher* | *dissect* | *slit* | *saw* | *snip* | **Questionable:** |
| *carve* | *hack* | *notch* | *scalp* | *whittle* | |
| *chop* | *incise* | *pink* | *shave* | *blaze* | *decapitate* |
| *cleave* | *mince* | *rabbet* | *shear* | *chamfer* | *divide* |
| *clip* | *pare* | *rout* | *skin* | *dado* | *gash* |
| *cube* | *peel* | *score* | *slash* | *engrave* | *quarter* |
| *cut* | *plane* | *serrate* | *slice* | *flute* | *sever* |
| *dice* | *prune* | *nick* | | | *trim* |

**Levin 21.1: "cut" verbs**

*chip clip cut hack hew saw scrape scratch slash snip*

**Levin 21.2: "carve" verbs**

*bore bruise carve chip chop crop crush cube dent dice drill file fillet gash gouge grate grind mangle mash mince mow nick notch perforate prune pulverize punch shred slice slit spear squash squish*

---

**Constituents:**

**Agent** (prototypically human)
**Target** (relatively soft)
**Instrument** (with sharp edge)
**Motion**(s)
**Contact** (instrument / target surface)
**Cision** (on surface of target)
**Results** of cision (severance, etc.)
**Context** of normal use

**Possible parameters:**

**Activity context:**

Cooking Farming Sewing Carpentry Fighting Construction

**Instrument:**

- Name and type of instrument
- Edge of instrument
- Shape of edge:
  - Length of edge
  - Location of edge
  - Number of edges
- Application of edge to target
- Point vs edge

**Contact:**

- Energy of contact
- Direction of contact
- Duration of contact
- Location of contact:
  - On instrument
  - On target
- Control and consistency of contact

**Cision:**

- Shape of cision
- Length of cision
- Depth of cision
- Completion of cision
- Geometry/topology of cision
- Smoothness of cision
- Pieces (resulting from cision)
- Number, size, & shape

**Motion:**

- What moves:
  - Instrument
  - Agent
  - Target
- Repetition of motion
- Direction & path of motion
- Kinesthetics of motion
- Ballistic nature of motion

# Phonosemantic Coherence in English Assonances

| Assonance | Semantics (Embodied Image) |
|---|---|
| ***st-*** | 1-Dimensional Rigid (Standing Man) *stick staff stem stub stab step stake stiff stilt* |
| ***str-*** | 1-Dim Non-Rigid *strap string strum strain strip streak stream straw strand stretch* |
| ***br$_1$-*** | 1-Dim Connected (Plant) *brush break bridge brim briar browse branch bramble* |
| ***br$_2$-*** | Human (Gender Roles) ***M:*** *brute brawl bruise bris* ***F:*** *breed broad breast bread* |
| ***pr$_1$-*** | 1-Dim Extended *prick prod prop prow pretzel privet prong probe prawn prone* |
| ***pr$_2$-*** | Human (Social Roles) *proper prim priest prom prissy primp proud pray preen* |
| ***fl-*** | 2-Dim *float flat flap flense fletch flood flam flange flea fleece floe floor flip flank* |
| ***pl-*** | 2-Dim Thick *plush plump plaque plaster plank plate plow pleat plait platter plop* |
| ***n-*** | 3-Dim *nick niche nook nub nugget knuckle knurl knob nipple noggin nuzzle gnaw* |
| ***sn$_1$-*** | 3-Dim Convex w/ Concave (Fingers) *snap snare snatch snip snooker snag sneak* |
| ***sn$_2$-*** | 3-Dim Convex w/ Concave (Nose) *sneeze sniff snoot sneer snub snarl snore snot* |
| ***bl$_1$-*** | Color (Eye) *blue blood blush black blank blotch blaze blind blond bleach blur bloom* |
| ***bl$_2$-*** | Compressed Fluid (Eye) *blimp blush bloom blot blain blintz blood blow bloat* |
| ***bl$_3$-*** | Excess ('too much') *blotto blister blast bluster blab bliss bleep blare blemish* |
| ***gl-*** | Reflected Light (Eye) *glaze glimmer glimpse gleam glance glare glow gloom* |
| ***kr-*** | 1-Dim Bent *crutch cripple crack crotch cross crank crimp crevice crane crouch* |
| ***kl-*** | Connection ('together') *club clutch clam clamp clap cluster clench click cling* |
| ***skr-*** | 2-Dim + 1-D Motion *scrub scram scratch scribe scrape scrawl screw scroll screen* |
| ***sl$_1$-*** | Liquid/Solid Interface *slush slop sleet slick slather slime slurp slough sluice slide* |
| ***sl$_2$-*** | Pejorative *slob slut slander slang sludge slum sloth sleazy slobber slouch slur slope* |
| ***spl-*** | 1-Dim → 2-Dim *splay split spline splice splint splotch splash splatter splinter* |
| ***spr-*** | Extrusion (Plant) *sprout spread sprig spruce* (Liquid) *spring sprue spray sprinkle* |
| ***sk-*** | 2-Dim Extended *sky scum scuff scarf scour scale skate skid skim skip skirt scab* |
| ***skw-*** | Compressed *squash squint squeeze squeak squeegee squelch squirt squat squirm* |
| ***sw-*** | Rotary Motion *swirl swerve swash swing swoop sweep swath swab swish swizzle* |
| ***thr-*** | Constricted Path *throat through thrust throttle thread thresh throng thrall thrift* |
| ***dr-*** | Liquid *dredge drink drop drown drought dry drain dribble drizzle drool drip* |
| ***tr-*** | Travel *trudge trample trot trail traipse trip tread trek truck train tram track trolley* |
| ***y-*** | Vocal *yack yammer yap yowl yell yip yawn* Interjection *yuck yow yum yup yike yay* |

BR- 93 words 85 coherent Coherence Level 91%

Category **1** Human (Gender Role):

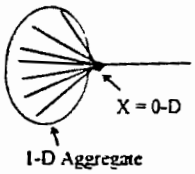
Male: **32** (essentially, aggressive display and territorial defense)

*bris brute brawl brag brave bruise bray brawn brandish britches*

Female: **19** (essentially, breeding and feeding)

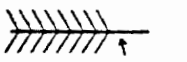
*breast bride bra brat bread braid brood broil broth braise broad*

**2** 1-Dimensional (Connected) Embodied Image: **Plant**



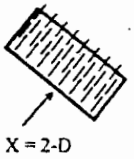

1a: **5** 1-D Aggregate Connected by 0-D X

*bristle brush bracken bramble briar*



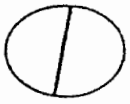

1b: **6** 1-D Aggregate Connected by 1-D X

*bristle brush brand bridle braid broom branch bract*




1c: **2** 1-D Aggregate Connected by 2-D X

*bristle brush browse brake*



2a: **12** Contiguous X Aggregate Connected by 1-D

*broad brim brow brink breadth breach broach break brittle*

2b: **8** Non-Contiguous X Aggregate Connected by 1-D

*bridge brace breech bracket brad*

**3** Leakage from **BL-**

**$BL_1$:** Fluid **14**

*brandy brackish brant brit bream breeze brook breath breathe*

**$BL_2$:** Color **6**

*brown bright brindle bronze bruise*

| Word | Ass | Rime | Suf | #1 | #2 | #3 |
|---|---|---|---|---|---|---|
| *bristle* | br | ɪs | əl | M | 1 | |
| *brush* | br | əʃ | | M | 1 | |
| *bracken* | br | æk | ən | | 1a | |
| *bramble* | br | æmb | əl | | 1a | |
| *briar* | br | ay | əɹ | | 1a | |
| *brand* | br | ænd | | | 1b | |
| *bridle* | br | ayd | əl | M | 1b | |
| *braid* | br | ed | | F | 1b | |
| *broom* | br | um | | F | 1b | |
| *branch* | br | æntʃ | | | 1b | |
| *bract* | br | ækt | | | 1b | |
| *browse* | br | awz | | | 1c | |
| *brake* | br | ek | | | 1c | |
| *broad* | br | ɔd | | F | 2a | |
| *brim* | br | ɪm | | | 2a | |
| *brow* | br | aw | | | 2a | |
| *brink* | br | ɪŋk | | | 2a | |
| *breadth* | br | ɛdθ | | | 2a | |
| *breach* | br | itʃ | | | 2a | |
| *broach* | br | otʃ | | | 2a | |
| *break* | br | ek | | | 2a | |
| *brittle* | br | ɪt | əl | | 2a | |
| *brace* | br | es | | | 2b | |
| *breech* | br | itʃ | | | 2b | |
| *bracket* | br | æk | ət | | 2b | |
| *bridge* | br | ɪdʒ | | | 2b | |
| *brad* | br | æd | | | 2b | |
| *brandish* | br | ænd | əʃ | M | | |
| *britch* | br | ɪtʃ | | M | 2b | |
| *bris* | br | ɪs | | M | 2b | |
| *brusque* | br | əsk | | M | | |
| *brash* | br | æʃ | | M | | |
| *brabble* | br | æb | əl | M | | |
| *brag* | br | æg | | M | | |
| *bribe* | br | ayb | | M | | |
| *bren* | br | ɛn | | M | | |
| *brevet* | br | ɛv | ət | M | | |
| *bray* | br | e | | M | | |
| *brave* | br | ev | | M | | |
| *brisk* | br | ɪsk | | M | | |
| *brawl* | br | ɔl | | M | | |
| *brawn* | br | ɔn | | M | | |
| *bruin* | br | u | ən | M | | |
| *bruit* | br | ut | | M | | |
| *brute* | br | ut | | M | | |
| *brutal* | br | ut | əl | M | | |
| *bruise* | br | uz | | M | | 2 |

| Word | Ass | Rime | Suf | #1 | #2 | #3 |
|---|---|---|---|---|---|---|
| *brass* | br | æs | | M | | |
| *brothel* | br | aθ | əl | M | | |
| *brig* | br | ɪg | | M | | |
| *braze* | br | ez | | M | 2a | |
| *brick* | br | ɪk | | M | | 2 |
| *brunt* | br | ənt | | M | 2a | |
| *brother* | br | əð | əɹ | M | | |
| *bre'r* | br | ɛɹ | | M | | |
| *bro'* | br | o | | M | | |
| *bran* | br | æn | | F | | |
| *breast* | br | ɛst | | F | | 1 |
| *brunch* | br | əntʃ | | F | | |
| *brine* | br | ayn | | F | | 1 |
| *bread* | br | ɛd | | F | | |
| *braise* | br | ez | | F | | 1 |
| *brisket* | br | ɪsk | ət | F | | |
| *broth* | br | ɔθ | | F | | 1 |
| *broil* | br | oyl | | F | | |
| *brew* | br | u | | F | | 1 |
| *bra* | br | a | | F | 2b | |
| *brooch* | br | otʃ | | F | 2a | |
| *bride* | br | ayd | | F | | |
| *breed* | br | id | | F | | |
| *brat* | br | æt | | F | | |
| *brood* | br | ud | | F | | |
| *brandy* | br | ænd | i | | | 1 |
| *brackish* | br | æk | əʃ | | | 1 |
| *brant* | br | ænt | | | | 1 |
| *brit* | br | ɪt | | | | 1 |
| *bream* | br | im | | | | 1 |
| *breeze* | br | iz | | | | 1 |
| *brook* | br | ʊk | | | | 1 |
| *breath* | br | ɛθ | | | | 1 |
| *breathe* | br | ið | | | | 1 |
| *brown* | br | awn | | | | 2 |
| *bright* | br | ayt | | | | 2 |
| *brindle* | br | ɪnd | əl | | | 2 |
| *bronze* | br | anz | | | | 2 |
| *bronco* | br | aŋk | o | | | |
| *breve* | br | ɛv | | | | |
| *braille* | br | el | | | | |
| *bring* | br | ɪŋ | | | | |
| *brief* | br | if | | | | |
| *brain* | br | en | | | | |
| *broker* | br | ok | əɹ | | | |
| *brogue* | br | og | | | | |

PR- 78 words 58 coherent Coherence Level 74%

Category 1 1-D (Extended) 18 *prod pry prop prong prick prone pretzel*

2 Human (Social Role) 45 *proud prior pride prep prince prance prim*

| Word | Ass | Rime | Suf | 1 | 2 |
|---|---|---|---|---|---|
| *prod* | pr | ad | | √ | |
| *pry* | pr | ay | | √ | √ |
| *pretzel* | pr | ɛts | əl | √ | |
| *prop* | pr | ap | | √ | |
| *prow* | pr | aw | | √ | |
| *prawn* | pr | ɔn | | √ | |
| *probe* | pr | ob | | √ | |
| *prong* | pr | ɔŋ | | √ | |
| *prickle* | pr | ɪk | əl | √ | |
| *prick* | pr | ɪst | | √ | |
| *practice* | pr | ækt | əs | √ | √ |
| *privet* | pr | ɪv | ət | √ | |
| *prism* | pr | ɪz | əm | √ | |
| *prison* | pr | ɪz | ən | √ | √ |
| *prowl* | pr | awl | | √ | |
| *prowess* | pr | aw | əs | √ | √ |
| *praxis* | pr | æks | əs | √ | √ |
| *prone* | pr | on | | √ | √ |
| *proud* | pr | awd | | | √ |
| *prior* | pr | ay | əɹ | | √ |
| *prophet* | pr | af | ət | | √ |
| *profit* | pr | af | ət | | √ |
| *proxy* | pr | aks | i | | √ |
| *prosper* | pr | asp | əɹ | | √ |
| *pride* | pr | ayd | | | √ |
| *price* | pr | ays | | | √ |
| *private* | pr | ayv | ət | | √ |
| *prize* | pr | ayz | | | √ |
| *precious* | pr | ɛʃ | əs | | √ |
| *prelate* | pr | ɛl | ət | | √ |
| *prep* | pr | ɛp | | | √ |
| *praetor* | pr | et | əɹ | | √ |
| *prince* | pr | ɪns | | | √ |
| *privy* | pr | ɪv | i | | √ |
| *priest* | pr | ist | | | √ |
| *pro* | pr | o | | | √ |
| *pray* | pr | e | | | √ |
| *pram* | pr | æm | | | √ |
| *prance* | pr | æns | | | √ |

| Word | Ass | Rime | Suf | 1 | 2 |
|---|---|---|---|---|---|
| *prattle* | pr | æt | əl | | √ |
| *proffer* | pr | af | əɹ | | √ |
| *prom* | pr | am | | | √ |
| *prude* | pr | ud | | | √ |
| *prompt* | pr | ampt | | | √ |
| *proper* | pr | ap | əɹ | | √ |
| *prayer* | pr | ɛɹ | | | √ |
| *prate* | pr | et | | | √ |
| *praise* | pr | ez | | | √ |
| *prig* | pr | ɪg | | | √ |
| *prim* | pr | ɪg | | | √ |
| *primp* | pr | ɪmp | | | √ |
| *prink* | pr | ɪŋk | | | √ |
| *prissy* | pr | ɪs | i | | √ |
| *pretty* | pr | ɪt | i | | √ |
| *preach* | pr | itʃ | | | √ |
| *preen* | pr | in | | | √ |
| *promise* | pr | am | əs | | √ |
| *prank* | pr | æŋk | | | √ |
| *prat* | pr | æt | | | |
| *prime* | pr | aym | | | |
| *primal* | pr | aym | əl | | |
| *preface* | pr | ɛf | əs | | |
| *premise* | pr | ɛm | əs | | |
| *prairie* | pr | ɛɹ | i | | |
| *press* | pr | ɛs | | | |
| *pronto* | pr | ant | o | | |
| *presto* | pr | ɛst | o | | |
| *primer* | pr | ɪm | əɹ | | |
| *print* | pr | ɪnt | | | |
| *preemie* | pr | im | i | | |
| *primo* | pr | im | o | | |
| *prole* | pr | ol | | | |
| *propyl* | pr | op | əl | | |
| *prose* | pr | oz | | | |
| *prove* | pr | uv | | | |
| *proof* | pr | uf | | | |
| *prune* | pr | un | | | |
| *prey* | pr | e | | | |

BL- 70 words 57 coherent Coherence Level 81%

Category 1 **Fluid (Contained)** 20 *blood blister blast blubber blimp blush blow*

2 **Color/Eye** 26 *blaze blot blind blip black blue blond bleach*

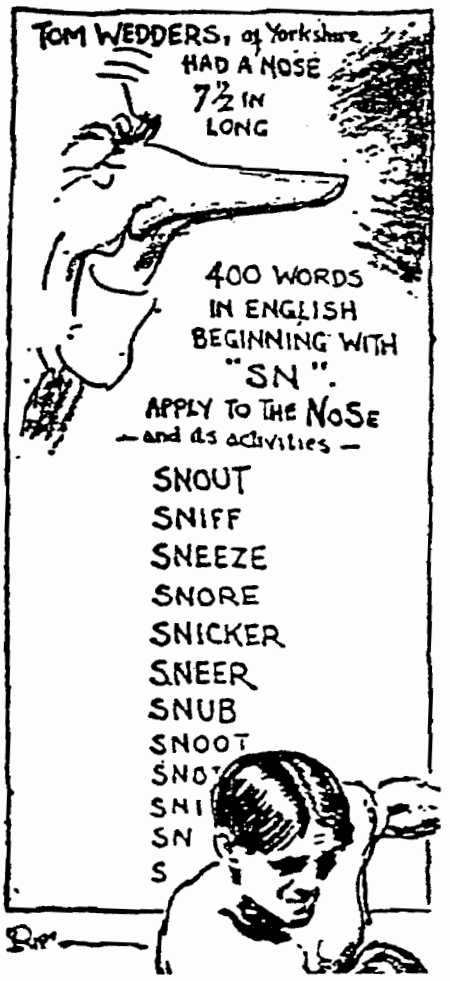
Embodied Image: **Human Eye** (a fluid-filled organ which is colored and perceives color)

Category 3 **Excess ('too much')** 46 *blurt blither blur blight blanch blotch blear*

| *Word* | *Ass* | *Rime* | *Suf* | *1* | *2* | *3* |
|---|---|---|---|---|---|---|
| ***blintz*** | bl | ɪnts | | √ | | |
| ***blob*** | bl | ab | | √ | | |
| ***blood*** | bl | əd | | √ | √ | |
| ***bloom*** | bl | um | | √ | √ | |
| ***blossom*** | bl | as | əm | √ | √ | |
| ***blaze*** | bl | ez | | √ | √ | √ |
| ***bleed*** | bl | id | | √ | √ | √ |
| ***blush*** | bl | əʃ | | √ | √ | √ |
| ***bloat*** | bl | ot | | √ | | √ |
| ***blister*** | bl | ɪst | əɹ | √ | | √ |
| ***blow*** | bl | o | | √ | | √ |
| ***blurt*** | bl | əɹt | | √ | | √ |
| ***blam*** | bl | æm | | √ | | √ |
| ***blast*** | bl | æst | | √ | | √ |
| ***blat*** | bl | æt | | √ | | √ |
| ***blotto*** | bl | ato | | √ | | √ |
| ***blare*** | bl | ɛɹ | | √ | | √ |
| ***blain*** | bl | en | | √ | | √ |
| ***blimp*** | bl | ɪmp | | √ | | √ |
| ***blubber*** | bl | əb | əɹ | √ | | √ |
| ***blue*** | bl | u | | | √ | |
| ***blurb*** | bl | əɹb | | | √ | |
| ***blip*** | bl | ɪp | | | √ | |
| ***black*** | bl | æk | | | √ | |
| ***blond*** | bl | and | | | √ | |
| ***blazon*** | bl | ez | ən | | √ | |
| ***blind*** | bl | aynd | | | √ | √ |
| ***blink*** | bl | ɪŋk | | | √ | √ |
| ***blank*** | bl | æŋk | | | √ | √ |
| ***blemish*** | bl | ɛm | əʃ | | √ | √ |
| ***bleb*** | bl | ɛb | | | √ | √ |
| ***bleach*** | bl | itʃ | | | √ | √ |
| ***bleak*** | bl | ik | | | √ | √ |
| ***blear*** | bl | ɪɹ | | | √ | √ |
| ***blench*** | bl | ɛntʃ | | | √ | √ |

| *Word* | *Ass* | *Rime* | *Suf* | *1* | *2* | *3* |
|---|---|---|---|---|---|---|
| ***blot*** | bl | at | | | √ | √ |
| ***blight*** | bl | ayt | | | √ | √ |
| ***blanch*** | bl | æntʃ | | | √ | √ |
| ***blotch*** | bl | atʃ | | | √ | √ |
| ***blur*** | bl | əɹ | | | √ | √ |
| ***bliss*** | bl | ɪs | | | | √ |
| ***blither*** | bl | ɪð | əɹ | | | √ |
| ***blowsy*** | bl | awz | i | | | √ |
| ***blarney*** | bl | aɹn | i | | | √ |
| ***bland*** | bl | ænd | | | | √ |
| ***blather*** | bl | æð | əɹ | | | √ |
| ***bluff*** | bl | əf | | | | √ |
| ***bleep*** | bl | ip | | | | √ |
| ***bludgeon*** | bl | ədʒ | ən | | | √ |
| ***blunder*** | bl | ənd | əɹ | | | √ |
| ***blunt*** | bl | ənt | | | | √ |
| ***bluster*** | bl | əst | əɹ | | | √ |
| ***blitz*** | bl | ɪts | | | | √ |
| ***blooper*** | bl | up | əɹ | | | √ |
| ***blight*** | bl | ayt | | | | √ |
| ***blah*** | bl | a | | | | √ |
| ***blabber*** | bl | æb | əɹ | | | √ |
| ***blab*** | bl | æb | | | | √ |
| ***blanket*** | bl | æŋk | ət | | | |
| ***blithe*** | bl | ayð | | | | |
| ***blouse*** | bl | aws | | | | |
| ***block*** | bl | ak | | | | |
| ***blend*** | bl | ɛnd | | | | |
| ***bless*** | bl | ɛs | | | | |
| ***blade*** | bl | ed | | | | |
| ***bloc*** | bl | ak | | | | |
| ***bleat*** | bl | lit | | | | |
| ***blame*** | bl | em | | | | |
| ***blandish*** | bl | ænd | əʃ | | | |
| ***bleacher*** | bl | itʃ | əɹ | | | |

*From* The Data Fetishist's Guide to Rime Coherence John Lawler, U Michigan
To appear in *Poetry and Candy Colored Syntax: Language Presented to Háj Ross*
(2004; Haralampos Kalpakidis and William Salmon, eds.)




## V. Conclusion

For the data fetishists that constitute my prospective audience, I have included here four appendices, with examples of 62 of the 96 vigesimal rimes, and full particulars for the top 6 that I have discussed here. In addition, a list of all non-vigesimal rimes appears in Appendix B. That leaves only those 34 vigesimal rimes that I do not consider to have any significant phonosemantic coherence. I provide below a list of these, with their size.

All of the data for these and for the rimes in the Appendices were extracted from the database in the first instance. Semantic coding, however, is not part of the database; therefore, I am making the coded data available in a collection of 96 ASCII files, one for each vigesimal rime, archived on my Web site, at http://www.umich.edu/~jlawler/rimes.zip. I encourage anyone interested in this phenomenon, and their students, to download the database, and these data files, and second-guess me.

This kind of activity is especially interesting, I have found, for students, and it makes a splendid student project that can, if done carefully, provide significant information and generalizations. There are many, many more phenomena left to investigate here; and each one demonstrates what I consider the best-kept secret in America – that linguistics is fun.

**Non-Coherent Vigesimal Rimes (rimes occurring in 20 or more simplex words)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **-ɛr** | 76 | **-ɛt** | 37 | **-ɪg** | 30 | **-ɛt** | 26 | **-ərn** | 22 | **-ɛv** | 20 |
| **-ɔr** | 53 | **-ɪk** | 34 | **-ɪn** | 29 | **-æl** | 26 | **-art** | 22 | **-ayr** | 20 |
| **-ay** | 45 | **-ak** | 32 | **-ɛl** | 29 | **-ɛn** | 26 | **-ɛst** | 22 | **-ɛd** | 20 |
| **-ey** | 44 | **-aw** | 31 | **-id** | 28 | **-ɛk** | 26 | **-ayd** | 21 | **-ɪd** | 20 |
| **-ok** | 40 | **-ɪn** | 31 | **-al** | 28 | **-ɛv** | 25 | **-æs** | 21 | | |
| **-el** | 37 | **-ʊt** | 31 | **-ən** | 27 | **-iz** | 24 | **-un** | 21 | | |

# Appendix A  Vigesimal Rimes in Simplex Words, by Phonosemantic Coherence

62 Coherent Rimes, with examples (often overlapping)

| Rime | Size | *Coherence* Num | Pct | Rank | Examples |
|---|---|---|---|---|---|
| **-ap** | 31 | 27 | 87% | 1 | RL81 **Ab Cess** *chop drop* **Ballistic** *topple hop* **Sep** *chop crop* **Impact** *plop bop* |
| **-ɔl** | 28 | 24 | 86 | 2 | **2D** *shawl sprawl wall* **Motion** *crawl brawl haul fall* **Contact** *maul trawl spall awl* |
| **-əb** | 34 | 29 | 85 | 3 | **1D Thick** *slub club chub stubble* **Dim** *shrub stub cub* **Pej** *flub lubber rubble* |
| **-əmp** | 26 | 22 | 85 | 4 | RL81 **3D** *rump hump lump clump stump* **Pej** *frump grump chump rumpus* |
| **-əŋk** | 22 | 18 | 82 | 5 | **Pej** *junk flunk bunk skunk drunk* **Hum** *punk lunk monk* **Aural** *clunk thunk plunk* |
| **-ɪp** | 41 | 32 | 78 | 6 | **2D+3D** *pip lip grip flip blip* **2D-3D** *nip chip snip dip* **Dim** *sip yip tip ripple* |
| **-əg** | 31 | 24 | 77 | 7 | **Pej** *ugh ugly lug slug thug mug* **Fluid** *glug jug chug* **3D Dim** *nugget snug* |
| **-ɪz** | 21 | 16 | 76 | 8 | **Separated/Dispersed/Multiple** *fizz drizzle schism sizzle dizzy* **Fluid** *jism chrism* |
| **-ɪŋk** | 34 | 25 | 74 | 9 | **Dim** *slink trinket tinker wink shrink dinky* **Dim Aural** *chink dink plink tinkle* |
| **-æk** | 47 | 33 | 70 | 10 | **2D Connected** *plaque stack bracket tacky* **Aural** *crack clack quack yack* |
| **-æg** | 39 | 27 | 69 | 11 | **Crooked/Broken** *snag zag crag sag rag* **2D** *drag rag wagon swagger flag* |
| **-æʃ** | 25 | 17 | 68 | 12 | RL81 **Violent Contact** *bash trash crash thrash slash gash* |
| **-æŋ** | 27 | 18 | 67 | 13 | **1D Connected** *hang angle dangle tangle* **Aural** *jangle twang bang clang* |
| **-æp** | 30 | 20 | 66 | 14 | RL81 **2D** *flap clap lap map wrap* **Contact** *slap strap chap rap tap* |
| **-ɪŋ** | 32 | 21 | 66 | 15 | RL81 **Dir Force** *sling sting spring ring* **Dim Aural** *ping ding jingle lingo* |
| **-il** | 23 | 15 | 65 | 16 | **2D Motion** *peel feel wheel keel kneel seal heel* |
| **-ɛs** | 20 | 13 | 65 | 17 | **1D Crossed** *fess wrestle trestle press chess wrestle trestle* |
| **-æt** | 53 | 34 | 64 | 18 | *(Tongue)* **2D** *pat slat mat spatter flat* **Speech** *blat chatter spat prattle* |
| **-əf** | 31 | 19 | 61 | 19 | **2D Friction** *scuff snuff shuffle ruffle rough* **Indist Sens** *fluff muffle gruff* |
| **-ɪnt** | 20 | 12 | 60 | 20 | **Dim Multiple** *splinter glint hint lint sinter stint* **Visual/Eye** *glint squint* |
| **-æmp** | 22 | 13 | 59 | 21 | **2D Contact** *clamp cramp tamp damper ramp trample champ stamp scamper* |
| **-ab** | 34 | 20 | 59 | 22 | **3D Extrusion** *knob fob glob bobbin cobble gob cob blob* |
| **-ɪt** | 47 | 27 | 57 | 23 | **Dim** *spit whittle little kitten bit grit twitter ditty jitter critter* |
| **-ɪk** | 48 | 27 | 56 | 24 | **Dim 3D: Concave** *nick crick tick click flick hickey* **Convex** *prick wick tickle* |
| **-æb** | 34 | 20 | 56 | 25 | **Pej** *rabble drab shabby crab* **Speech** *blabber jabber babble gabble* |
| **-æm** | 35 | 19 | 54 | 26 | **2D Contact** *slam hammer flam clam cam* **Aural** *bam blam clamor stammer* |
| **-ʊm** | 24 | 13 | 54 | 27 | **3D Interior/Expansion** *room womb tomb bloom tumor* |
| **-ez** | 26 | 14 | 54 | 28 | **2D Contact** *graze glaze blaze braze raze* **Indist Sens** *daze haze craze* |
| **-ɛnd** | 21 | 11 | 52 | 29 | **1D Non-Linear** *bend wend fend* **Mix/Fluid** *mend render blend* |
| **-ænd** | 31 | 16 | 52 | 30 | **1D+2D** *stand strand sandal band hand* **Pej** *bland vandal pander scandal* |
| **-ət** | 37 | 19 | 51% | 31 | **3D Concave/Closure** *gut shut rut butt hut rut glut gutter putty shutter stutter* |

**Di**minutive, **2**-Dimensional, **3**-Dimensional, **Indi**stinct **Sens**ation, **Pej**orative, ***(Embodied Image)***
**Ab**rupt **Ces**sation, **Sep**arate. RL81 = Rhodes, R. and J. Lawler, 1981. "Athematic Metaphors", CLS 17

# Appendix A Vigesimal Rimes in Simplex Words, by Phonosemantic Coherence

62 Coherent Rimes, with examples (often overlapping)

| Rime | Size | *Coherence* Num | Pct | Rank | Examples |
|---|---|---|---|---|---|
| **-əs** | 20 | 10 | 50% | 32 | **Clothing/Stricture(?)** *gusset hussy truss bustle muss gussy* |
| **-i** | 41 | 20 | 49 | 33 | **Alphabet** *B C D E* **Closed Class** *3 he she we be* |
| **-æŋk** | 31 | 14 | 45 | 34 | **Articulation/Body Part** *flank ankle shank hank spank yank crank wank* |
| **-ərk** | 21 | 9 | 43 | 35 | **Pej** *irk lurk murk turkey jerk shirk smirk* |
| **-ɔ** | 21 | 9 | 43 | 35 | *(Mouth/Tooth/Claw) craw paw claw chaw jaw maw gnaw* |
| **-ɪv** | 21 | 9 | 43 | 35 | **Dim Multiple** *shiver quiver sliver sieve divot privet rivet* |
| **-ɪm** | 26 | 11 | 42 | 38 | **2D** *shim brim rim scrim skim shimmer swim* |
| **-ayt** | 38 | 16 | 42 | 39 | **Light** *light bright white sight* **Fight** *fight smite bite* **Up** *height kite* |
| **-ip** | 24 | 10 | 42 | 40 | **Vertical** *steep teepee leap heap deep* **Aural** *bleep cheep peep* |
| **-əd** | 25 | 10 | 40 | 41 | **Liquid** *flood blood mud crud puddle rudder udder* |
| **-ɪl** | 47 | 18 | 38 | 42 | **2D Concave** *fill drill gill rill* **2D Convex** *hill spill pillow frill billow quill* |
| **-ək** | 26 | 10 | 38 | 43 | **Out/Off/Remove** *shuck buck chuck duck pluck suck* |
| **-o** | 44 | 16 | 36 | 44 | **2D Contact** *bow blow flow floe grow hoe low mow sow sew snow loess* |
| **-ər** | 39 | 14 | 36 | 45 | **Ind Sens** *blur fur purr slurry slur scurry lurid* |
| **-awt** | 23 | 8 | 35 | 46 | **Aggressive Contact** *clout shout bout flout lout knout rout* |
| **-ad** | 29 | 10 | 34 | 47 | **Earth/Contact/Movement** *clod sod shod hod plod toddle dodder waddle* |
| **-ayn** | 30 | 10 | 33 | 48 | **RL81 1D** *(Plant) twine vine bine pine cline line spline tine spine* |
| **-en** | 42 | 14 | 33 | 49 | **1D** *chain cane crane lane rein train vein* **2D** *vane pane plain plane blain* |
| **-up** | 25 | 8 | 32 | 50 | RL81 **Curve** *scoop droop group hoop loop stoop swoop* |
| **-im** | 22 | 7 | 32 | 51 | **1D in 2/3D** *beam gleam cream ream seam stream femur* |
| **-ol** | 38 | 12 | 32 | 52 | **Round** *knoll roll roly poly hole whole thole bowl boll bole bolo bolus* |
| **-æn** | 23 | 7 | 30 | 53 | **2D** *fan flan pan scan span panel banner* |
| **-at** | 33 | 10 | 30 | 54 | **Dim Color** *dot blot spot knot clot mottle blotto dottle jot slot* |
| **-ot** | 23 | 7 | 30 | 55 | **2D Surface** *float boat bloat moat lotus* (RL81 **Water**) *stoat throat* |
| **-æd** | 31 | 8 | 26 | 56 | **2D Surface** *plaid brad clad pad paddle saddle straddle ladder* |
| **-əm** | 34 | 9 | 26 | 57 | **Pej** *scum slum bum dumb glum crumb numb* |
| **-ɛd** | 27 | 6 | 22 | 58 | **2D Contact** *spread bed lead sled tread pedal* |
| **-on** | 23 | 5 | 22 | 59 | **Noise** *tone phone drone groan moan* |
| **-ɪr** | 43 | 9 | 21 | 60 | **Face/Eye/Nose/Ear** *sneer smear clear leer peer blear jeer ear hear* |
| **-it** | 34 | 7 | 21 | 61 | **2D** *cleat pleat skeet sheet seat peat beetle* |
| **-u** | 60 | 12 | 20% | 62 | **Liquid/Thick** *goo flue dew brew glue slough sprue spew stew fluid sewer* |

**Dim**inutive, **2**-Dimensional, **3**-Dimensional, **Indis**tinct **Sens**ation, **Pej**orative, ***(Embodied Image)*** **Abrupt Cessation, Separate.** RL81 = Rhodes, R. and J. Lawler, 1981. "Athematic Metaphors", CLS 17

# Appendix C Snapshots of the 3 Most Coherent Rime Sets

-ap 31 words 27 coherent Coherence Level 87% Rank 1

| Category | | | | |
|---|---|---|---|---|
| | 1 | abrupt cessation of motion (RL81) | 16 | *stop drop flop chop* |
| | 2 | ballistic motion (RL81) | 14 | *drop chop bop flop* |
| | 3 | separate/cut | 14 | *crop chop lop topple* |
| | 4 | impact | 14 | *whop plop clop bop* |
| | 5 | vertical orientation | 12 | *drop hop top prop* |
| | 6 | pejorative | 9 | *wop fop slop glop* |
| | 7 | acoustic image | 4 | *clop bop pop whop* |
| | 8 | fluid | 5 | *drop slop mop glop sop* |

| *Word* | *Ass* | *Rime* | *Suf* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *chop* | tʃ | ap | | √ | √ | √ | √ | √ | | | |
| *lop* | l | ap | | √ | √ | √ | √ | √ | | | |
| *drop* | dr | ap | | √ | √ | √ | √ | √ | | | √ |
| *topple* | t | ap | -əl | √ | √ | √ | √ | √ | | | |
| *plop* | pl | ap | | √ | √ | √ | √ | √ | √ | | |
| *clop* | kl | ap | | √ | √ | √ | √ | | | √ | |
| *pop* | p | ap | | √ | √ | √ | √ | | | √ | |
| *strop* | str | ap | | √ | √ | √ | √ | | | | |
| *bop* | b | ap | | √ | √ | | √ | | | √ | |
| *whop* | hw | ap | | √ | √ | | √ | | | √ | |
| *flop* | fl | ap | | √ | √ | | √ | | √ | | |
| *hop* | h | ap | | √ | √ | | √ | √ | | | |
| *top* | t | ap | | √ | √ | √ | | √ | | | |
| *crop* | kr | ap | | √ | | √ | | √ | | | |
| *prop* | pr | ap | | | | √ | | √ | | | |
| *sop* | s | ap | | | √ | √ | | | √ | | √ |
| *slop* | sl | ap | | | √ | √ | √ | | √ | | √ |
| *mop* | m | ap | | | | | | √ | | | √ |
| *glop* | gl | ap | | | | | | | √ | | √ |
| *hopper* | h | ap | -ər | | | | √ | √ | | | |
| *cop* | k | ap | | √ | | √ | | | | | |
| *stop* | st | ap | | √ | | √ | √ | √ | | | |
| *swap* | sw | ap | | √ | | | | | | | |
| *wop* | w | ap | | | | | | | √ | | |
| *fop* | f | ap | | | | | | | √ | | |
| *op* | | ap | | | | | | | √ | | |
| *copper* | k | ap | -ər | | | | | | √ | | |
| *shop* | ʃ | ap | | | | | | | | | |
| *proper* | pr | ap | -ər | | | | | | | | |
| *topic* | t | ap | -ək | | | | | | | | |
| *tropic* | tr | ap | -ək | | | | | | | | |

# Appendix C Snapshots of the 3 Most Coherent Rime Sets

-ɔl 28 words 24 coherent Coherence Level 86% Rank 2

| Category | | | | |
|---|---|---|---|---|
| | 1 | contact | 16 | *crawl spall brawl maul* |
| | 2 | 2-Dimensional | 15 | *scrawl trawl shawl wall* |
| | 3 | motion | 13 | *squall trawl haul fall* |
| | 4 | expanse | 12 | *sprawl mall hall all* |
| | 5 | horizontal orientation | 8 | *trawl haul hall sprawl* |
| | 6 | vocal image | 3 | *call bawl drawl* |

| *Word* | *Ass* | *Rime* | *Suf* | *1* | *2* | *3* | *4* | *5* | *6* |
|---|---|---|---|---|---|---|---|---|---|
| *crawl* | kr | ɔl | | √ | √ | √ | √ | √ | |
| *scrawl* | skr | ɔl | | √ | √ | √ | √ | √ | |
| *sprawl* | spr | ɔl | | √ | √ | √ | √ | √ | |
| *trawl* | tr | ɔl | | √ | √ | √ | √ | √ | |
| *squall* | skw | ɔl | | √ | √ | √ | √ | | |
| *haul* | h | ɔl | | √ | √ | √ | | √ | |
| *spall* | sp | ɔl | | √ | √ | √ | | | |
| *maul* | m | ɔl | | √ | √ | √ | | | |
| *shawl* | ʃ | ɔl | | √ | √ | | √ | | |
| *wall* | w | ɔl | | √ | √ | | √ | | |
| *pall* | p | ɔl | | √ | √ | | √ | √ | |
| *awl* | | ɔl | | √ | √ | | | | |
| *brawl* | br | ɔl | | √ | | √ | √ | | |
| *pawl* | p | ɔl | | √ | | √ | | | |
| *fall* | f | ɔl | | √ | | √ | | | |
| *gall* | g | ɔl | | √ | | | | | |
| *yawl* | y | ɔl | | | √ | √ | | | |
| *hall* | h | ɔl | | | √ | | √ | √ | |
| *mall* | m | ɔl | | | √ | | √ | √ | |
| *ball* | b | ɔl | | | | √ | | | |
| *all* | | ɔl | | | | | √ | | |
| *call* | k | ɔl | | | | | | | √ |
| *bawl* | b | ɔl | | | | | | | √ |
| *drawl* | dr | ɔl | | | | | | | √ |
| *small* | sm | ɔl | | | | | | | |
| *stall* | st | ɔl | | | | | | | |
| *tall* | t | ɔl | | | | | | | |
| *thrall* | pr | ɔl | | | | | | | |

# Appendix C Snapshots of the 3 Most Coherent Rime Sets

-əb 34 words 29 coherent Coherence Level 85% Rank 3

| | | | | |
|---|---|---|---|---|
| Category | 1 | pejorative | 21 | *bub glub lubber rubbish stubble* |
| | 2 | 1D thick | 13 | *snub stub slub nub club tubby* |
| | 3 | diminutive | 11 | *shrub cub stub hubby cubby* |

| Word | fAss | Rime | Suf | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| *shrub* | ʃr | əb | | √ | √ | √ |
| *drub* | dr | əb | | √ | √ | √ |
| *grub* | gr | əb | | √ | √ | √ |
| *stubble* | st | əb | -əl | √ | √ | √ |
| *chub* | tʃ | əb | | √ | √ | √ |
| *dub* | d | əb | | √ | √ | |
| *snub* | sn | əb | | √ | √ | |
| *tubby* | t | əb | -i | √ | √ | |
| *cub* | k | əb | | √ | | √ |
| *rubble* | r | əb | -əl | √ | | √ |
| *stub* | st | əb | | | √ | √ |
| *blubber* | bl | əb | -ər | √ | | |
| *bub* | b | əb | | √ | | |
| *flub* | fl | əb | | √ | | |
| *grubby* | gr | əb | -i | √ | | |
| *hubba* | h | əb | -ə | √ | | |
| *lubber* | l | əb | -ər | √ | | |
| *rub* | r | əb | | √ | | |
| *rubbish* | r | əb | -əʃ | √ | | |
| *scrub* | skr | əb | | √ | | |
| *trouble* | tr | əb | -əl | √ | | |
| *tub* | t | əb | | √ | | |
| *club* | kl | əb | | | √ | |
| *hub* | h | əb | | | √ | |
| *nub* | n | əb | | | √ | |
| *slub* | sl | əb | | | √ | |
| *bubble* | b | əb | -əl | | | √ |
| *cubby* | k | əb | -i | | | √ |
| *hubby* | h | əb | -i | | | √ |
| *double* | d | əb | -əl | | | |
| *glub* | gl | əb | | | | |
| *pub* | p | əb | | | | |
| *rubber* | r | əb | -ər | | | |
| *sub* | s | əb | | | | |

# Appendix D  Snapshots of the 3 Next Most Coherent Rime Sets

## -əmp  22/26 = 85%  Rank 4 [overlap 1]

**1) *R&L81* 3-D (15)**

*bump* *clump*
*dump* *plump*
*hump* *slump*
*jump* *stump*
*lump* *rumple*
*rump* *crumple*
*sump* *tump*
*mump*

**2) Pejorative (7)**

**2a) Personal** **2b) Aural**

*chump* *crump*
*frump* *thump*
*grump* *trumpet*

**a&b)** *rumpus*

**3) Residue (4)**

*pump*
*trump*
*compass*
*crumpet*

## -əŋk  18/22 = 82%  Rank 5 [overlap 4]

**1) Pejorative (12)**

*bunco* *funk*
*bunk* *junk*
*drunk* *skunk*
*spunk*
*flunk*

**2) Human(oid) (5)**

*lunk* *nionk* *uncle*
*punk* *monkey*

**4) Piece (2)**

*hunk*
*chunk*

**5) Residue (4)**

*bunker*
*dunk*
*hunker*
*trunk*

*clunk* *thunk* *plunk*

**3) Noise (3)**

## -ɪp  32/41 = 78%  Rank 6 [large overlap]

**1) 2D ± 3D (28)**

**1a) Convex/Up [+3D] (18)**

*skip* *zipper* *flip*
*zip* *drip* *blip*
*trip* *cripple* *clip*
*hip* *grip*
*pip* *stipple* *tip*
*lip* *nipple* *ripple* *nipper*
*slip* *yip*

**1b) Concave/Down [–3D] (10)**

*nip* *scrip* *kipper*
*dip* *slipper* *quip*
*strip* *snip*
*chip* *sip*
*rip*
*snippet*

**2) Diminutive (13)**

**3) Residue (9)**

*whip* *hippie* *yippee*
*ship* *triple* *tipple*
*gyp* *chipper* *skipper*

# Body Ritual Among the Nacirema

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The anthropologist has become so familiar with the diversity of ways in which different peoples behave in similar situations that he is not apt to be surprised by even the most exotic customs. In fact, if all of the logically possible combinations of behavior have not been found somewhere in the world, he is apt to suspect that they must be present in some yet undescribed tribe. This point has, in fact, been expressed with respect to clan organization by Murdock (1949: 71). In this light, the magical beliefs and practices of the Nacirema present such unusual aspects that it seems desirable to describe them as an example of the extremes to which human behavior can go.

Professor Linton first brought the ritual of the Nacirema to the attention of anthropologists twenty years ago (1936: 326), but the culture of this people is still very poorly understood. They are a North American group living in the territory between the Canadian Cree, the Yaqui and Tarahumare of Mexico, and the Carib and Arawak of the Antilles. Little is known of their origin, though tradition states that they came from the east. According to Nacirema mythology, their nation was originated by a culture hero, Notgnishaw, who is otherwise known for two great feats of strength—the throwing of a piece of wampum across the river Pa-To-Mac and the chopping down of a cherry tree in which the Spirit of Truth resided.

Nacirema culture is characterized by a highly developed market economy which has evolved in a rich natural habitat. While much of the people's time is devoted to economic pursuits, a large part of the fruits of these labors and a considerable portion of the day are spent in ritual activity. The focus of this activity is the human body, the appearance and health of which loom as a dominant concern in the ethos of the people. While such a concern is certainly not unusual, its ceremonial aspects and associated philosophy are unique.

The fundamental belief underlying the whole system appears to be that the human body is ugly and that its natural tendency is to debility and disease. Incarcerated in such a body, man's only hope is to avert these characteristics through the use of the powerful influences of ritual and ceremony. Every household has one or more shrines devoted to this purpose. The more powerful individuals in the society have several shrines in their houses and, in fact, the opulence of a house is often referred to in terms of the number of such ritual centers it possesses. Most houses are of wattle and daub construction, but the shrine rooms of the more wealthy are walled with stone. Poorer families imitate the rich by applying pottery plaques to their shrine walls.

While each family has at least one such shrine, the rituals associated with it are not family ceremonies but are private and secret. The rites are normally only discussed with children, and then only during the period when they are being initiated into these mysteries. I was able, however, to establish sufficient rapport with the natives to examine these shrines and to have the rituals described to me.

The focal point of the shrine is a box or chest which is built into the wall. In this chest are kept the many charms and magical potions without which no native believes he could live. These preparations are secured from a variety of specialized practitioners. The most powerful of these are the medicine men, whose assistance must be rewarded with substantial gifts. However, the medicine men do not provide the curative potions for their clients, but decide what the ingredients should be and then write them down in an ancient and secret language. This writing is understood only by the medicine men and by the herbalists who, for another gift, provide the required charm.

The charm is not disposed of after it has served its purpose, but is placed in the charm-box of the household shrine. As these magical materials are specific for certain ills, and the real or imagined maladies of the people are many, the charm-box is usually full to overflowing. The magical packets are so numerous that people forget what their purposes were and fear to use them again. While the natives are very vague on this point, we can only assume that the idea in retaining all the old magical materials is that their presence in the charm-box, before which the body rituals are conducted, will in some way protect the worshipper.

Beneath the charm-box is a small font. Each day every member of the family, in succession, enters the shrine room, bows his head before the charm-box, mingles different sorts of holy water in the font, and proceeds with a brief rite of ablution.



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The holy waters are secured from the Water Temple of the community, where the priests conduct elaborate ceremonies to make the liquid ritually pure.

In the hierarchy of magical practitioners, and below the medicine men in prestige, are specialists whose designation is best translated "holy-mouth-men." The Nacirema have an almost pathological horror and fascination with the mouth, the condition of which is believed to have a supernatural influence on all social relationships. Were it not for the rituals of the mouth, they believe that their teeth would fall out, their gums bleed, their jaws shrink, their friends desert them, and their lovers reject them. (They also believe that a strong relationship exists between oral and moral characteristics. For example, there is a ritual ablution of the mouth for children which is supposed to improve their moral fiber.)

The daily body ritual performed by everyone includes a mouth-rite. Despite the fact that these people are so punctilious about care of the mouth, this rite involves a practice which strikes the uninitiated stranger as revolting. It was reported to me that the ritual consists of inserting a small bundle of hog hairs into the mouth, along with certain magical powders, and then moving the bundle in a highly formalized series of gestures.

In addition to the private mouth-rite, the people seek out a holy-mouth-man once or twice a year. These practitioners have an impressive set of paraphernalia, consisting of a variety of augers, awls, probes, and prods. The use of these objects in the exorcism of the evils of the mouth involves almost unbelievable ritual torture of the client. The holy-mouth-man opens the client's mouth and, using the above mentioned tools, enlarges any holes which decay may have created in the teeth. Magical materials are put into these holes. If there are no naturally occurring holes in the teeth, large sections of one or more teeth are gouged out so that the supernatural substance can be applied. In the client's view, the purpose of these ministrations is to arrest decay and to draw friends. The extremely sacred and traditional character of the rite is evident in the fact that the natives return to the holy-mouth-men year after year, despite the fact that their teeth continue to decay.

It is to be hoped that, when a thorough study of the Nacirema is made, there will be a careful inquiry into the personality structure of these people. One has but to watch the gleam in the eye of a holy-mouth-man, as he jabs an awl into an exposed nerve, to suspect that a certain amount of sadism is involved. If this can be established, a very interesting pattern emerges, for most of the population shows definite masochistic tendencies. It was to these that Professor Linton referred in discussing a distinctive part of the daily body ritual which is performed only by men. This part of the rite involves scraping and lacerating the surface of the face with a sharp instrument. Special women's rites are performed only four times during each lunar month, but what they lack in frequency is made up in barbarity. As part of this ceremony, women bake their heads in small ovens for about an hour. The theoretically interesting point is that what seems to be a preponderantly masochistic people have developed sadistic specialists.

The medicine men have an imposing temple, or *latipso*, in every community of any size. The more elaborate ceremonies required to treat very sick patients can only be performed at this temple. These ceremonies involve not only the thaumaturge but a permanent group of vestal maidens who move sedately about the temple chambers in distinctive costume and headdress.

The *latipso* ceremonies are so harsh that it is phenomenal that a fair proportion of the really sick natives who enter the temple ever recover. Small children whose indoctrination is still incomplete have been known to resist attempts to take them to the temple because "that is where you go to die." Despite this fact, sick adults are not only willing but eager to undergo the protracted ritual purification, if they can afford to do so. No matter how ill the supplicant or how grave the emergency, the guardians of many temples will not admit a client if he cannot give a rich gift to the custodian. Even after one has gained admission and survived the ceremonies, the guardians will not permit the neophyte to leave until he makes still another gift.

The supplicant entering the temple is first stripped of all his or her clothes. In every-day life the Nacirema avoids exposure of his body and its natural functions. Bathing and excretory acts are performed only in the secrecy of the household shrine, where they are ritualized as part of the body-rites. Psychological shock results from the fact that body secrecy is suddenly lost upon entry into the *latipso*. A man, whose own wife has never seen him in an excretory act, suddenly finds himself naked and assisted by a vestal maiden while he performs his natural functions into a sacred vessel. This sort of ceremonial treatment is necessitated by the fact that the excreta are used by a diviner to ascertain the course and nature of the client's sickness. Female clients, on the other hand, find their naked bodies are subjected to the scrutiny, manipulation, and prodding of the medicine men.

Few supplicants in the temple are well enough to do anything but lie on their hard beds. The daily ceremonies, like the rites of the holy-mouth-men, involve discomfort and torture. With ritual precision, the vestals awaken their miserable charges each dawn and roll them about on their beds of pain while performing ablutions, in the formal movements of which the maidens are highly trained. At other times they insert magic wands in the supplicant's mouth or force him to eat substances which are supposed to be healing. From time to time the medicine men come to their clients and jab magically treated needles into their flesh. The fact that these temple ceremonies may not cure, and may even kill the neophyte, in no way decreases the people's faith in the medicine men.

There remains one other kind of practitioner, known as a "listener." This witch-doctor has the power to exorcise the devils that lodge in the heads of people who have been bewitched. The Nacirema believe that parents bewitch their own children. Mothers are particularly suspected of putting a curse on children while teaching them the secret body rituals. The counter-magic of the witch-doctor is unusual in its lack of ritual. The patient simply tells the "listener" all his troubles and fears, beginning with the earliest difficulties he can remember. The memory displayed by the Nacirema in these exorcism sessions is truly remarkable. It is not uncommon for the patient to bemoan the re-



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jection he felt upon being weaned as a babe, and a few individuals even see their troubles going back to the traumatic effects of their own birth.

In conclusion, mention must be made of certain practices which have their base in native esthetics but which depend upon the pervasive aversion to the natural body and its functions. There are ritual fasts to make fat people thin and ceremonial feasts to make thin people fat. Still other rites are used to make women's breasts large if they are small, and smaller if they are large. General dissatisfaction with breast shape is symbolized in the fact that the ideal form is virtually outside the range of human variation. A few women afflicted with almost inhuman hypermammary development are so idolized that they make a handsome living by simply going from village to village and permitting the natives to stare at them for a fee.

Reference has already been made to the fact that excretory functions are ritualized, routinized, and relegated to secrecy. Natural reproductive functions are similarly distorted. Intercourse is taboo as a topic and scheduled as an act. Efforts are made to avoid pregnancy by the use of magical materials or by limiting intercourse to certain phases of the moon. Conception is actually very infrequent. When pregnant, women dress so as to hide their condition. Parturition takes place in secret, without friends or relatives to assist, and the majority of women do not nurse their infants.

Our review of the ritual life of the Nacirema has certainly shown them to be a magic-ridden people. It is hard to understand how they have managed to exist so long under the burdens which they have imposed upon themselves. But even such exotic customs as these take on real meaning when they are viewed with the insight provided by Malinowski when he wrote (1948:70):

> Looking from far and above, from our high places of safety in the developed civilization, it is easy to see all the crudity and irrelevance of magic. But without its power and guidance early man could not have mastered his practical difficulties as he has done, nor could man have advanced to the higher stages of civilization.

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