# Natural Language Semantics
## Answers to selected exercises
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The numbers are as in the text of *Natural Language Semantics* (Blackwell, 2001). Thus, 1.2.1 refers to Ch.1, §1.2, exercise 1.

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1.2.1   Identify some languages that are not natural human languages.

**Possible Answer:** Computer languages (Basic, Prolog, C, Java, etc.), systems of logic.

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1.2.2   Can you think of any supporting evidence for the assumption that meaning in natural languages is very responsive to, and often a reflex of, human perception and conception?

**Answer:** Throughout this book there is a wealth of evidence for the human centeredness (anthropocentricity) of language. For instance, traditional counting systems are mostly based on the numbers four, five, ten or 20, because of the structure of our hands and feet; e.g. in San Juan Southern Paiute, we find

| *ma-nuxi-y* | *shu - roxo - mai - y* | *toxo - mai - y* |
|---|---|---|
| hand-?-NOM | nearly-complete-hand-NOM | complete-hand-NOM |
| "five" | "nine" | "ten" |

(Bunte and Franklin 1988)

Traditional units of measurement are also determined by the human body, e.g. English *inch*, *hand*, *foot*, *yard*, *fathom*, *mile*. Most people are righthanded, and in many cultures the right hand is regarded more positively than the left hand (used in many cultures to handle the impure): cf. Latin *sinisteritas* "lefthand", the source for *sinister*; English *cackhanded* and *gauche* – the latter borrowed from French "lefthand". Assigning gender terms

to animals is often determined by whether or not the sex of the animal is of significance to a sizeable proportion of the language community, cf. Varro *De Lingua Latina* IX, 56 (c.45 BCE). Spontaneous anecdotes nearly always follow the chronology of events. All these, and much more, demonstrate the human-centredness of language and, indirectly, of the human cognition that language reflects. Yet although the physical configuration and neurophysiological apparatus of human beings give us all a common starting point for the way we experience the world, our perceptions of it are differentiated by individual cultures. The way in which speakers perceive the world and, as a result of their perceptions conceive of it, informs their linguistic categorization (cf. Allan 1977, 1986, Brugman 1983b, H. Clark 1973, Johnson 1987, Lakoff 1987, Langacker 1987, Svorou 1994).

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1.2.3   A whistle is used in different semiotic systems by a football referee, a policeman directing traffic, the doorman at a five-star hotel, and once upon a time by a workman on a building site when a young woman walks by. Comment on what all these systems have in common and yet how in each one the whistle has a distinct purpose. What is/are the language counterparts to the whistle?

**Possible Answer:** The whistles all have in common that they are intended to draw attention to the whistler, but for a different purpose in each situation. The language counterpart is an exclamative such as *Hey!* which is of marginal linguistic interest.

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1.3.1   How does the difference between (a) and (b) show the contribution of syntactic relations to the meanings of the sentences?
(a) The old woman chased the young man.
(b) The old man chased the young woman.

**Possible Answer:** (a) and (b) contain the same words (*chased, man, old, the, the, woman, young*) yet they have different

meanings. The explanation for the meaning difference must lie with the syntactic relations between the words.

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### 1.3.2 What is the difference in interpretation between 'someone' in 7 and the same word in 8?

**Possible Answer:** Example 7, *Everyone loves someone,* seems most likely to mean that everyone has at least one person that they love and the loved one will not be the same individual for everyone. In 8, *Someone loves everyone*, 'Someone' seems to mean "there is just one person who" (e.g. God). See the discussion in Chs 7, 13.

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### 1.4.1 What is meant by 'all possible combinations of vocabulary items in the metalanguage would be generated from fully specified syntactic axioms and rules of syntax; and the meanings of syntactically well formed structures would be fully specified by semantic rules and axioms for the metalanguage'?

**Possible Answer:** An axiom is a primitive statement the truth of which has to be accepted a priori, without proof. Glossing this text rather sketchily: every expression in the metalanguage has to be specified as to form, syntactic properties, and meaning. Every combination of forms must be explicitly accounted for in a grammar for the metalanguage; its grammaticality and meaning must be either axiomatic or provable from the axioms or rules stated for the metalanguage.

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### 1.4.2 Sometimes, in kin term semantics for example, we find the symbols "♀" and "♂" used in the metalanguage expression. What do you understand by them? Are they equivalent in meaning to some natural language expression? Do you think they can be understood without reference to a natural language?

**Possible Answer:** ♀ is equivalent to the English predicate "is female", and ♂ "is male". Opinions may differ on whether or not they can be understood without reference to natural language; but they cannot be talked about and explained without it.

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1.4.3 To get a machine to understand human language and to respond with human language as another person would, is it necessary for the semantic metalanguage to be equivalent to a natural language?

**Possible Answer:** Yes, because the machine is required to respond with human language; were it to respond with, say, a visual image it MIGHT be possible to bypass this requirement, depending on the sophistication of its 'understanding' of human language.

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1.4.4 What is the difference between knowing a language and knowing about a language?

**Possible Answer:** The speaker of a language $L_a$ will know $L_a$ without necessarily knowing anything about, for instance, its historical or structural characteristics, its relationships with other languages. A linguist may know a lot about language $L_a$ without being able to speak it fluently.

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1.5.1 We deduced from *Max is no longer a bachelor* that *Max is not (now) a bachelor*. Is this due to the fact that the meaning of *not* is contained within the meaning of *no longer*?

**Answer:** Yes.

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1.5.2 In what way is compositionality relevant to the deduction from (a1) and (a2) to (c)?

(a1)　　All semantics students are smart
∧　(a2)　　Harry is a semantics student
　　　————————————————————————
　　　(c) Harry is smart

**Possible Answer:** We discuss the semantics of *all* in Ch.13. When *all* quantifies individuals, as it does in (a1), we could, in principle, list those individuals – in this instance, semantics students. In fact any (positive) number of semantics students are included as part of *all semantic students* because (a1) is equivalent to "everyone (i.e. every person) who is a semantics student is smart". This is a universalization of *Someone who is a semantics student is smart* and in (a2) the 'Someone' is assigned the name 'Harry'. Hence the conclusion is valid (see Ch.7).

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1.5.3　What kind of inference leads to conclusion (c) from assumption (a):
　　　(a) Emma is drinking champagne and dancing
　　　————————————————————————
　　　(c) Emma is dancing

**Answer:** This is a classical deduction: from $p \wedge q$ deduce $q$ (also, from $p \wedge q$ deduce $p$). In (a) $p$=Emma is drinking champagne; $\wedge$=and; $q$=[Emma is] dancing.

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1.5.4　Construct one valid and one invalid argument using (in each case) three out of the four following propositions: (a) *A dentist is a tooth-doctor*. (b) *Harry was a policeman*. (c) *Harry is a tooth-doctor*. (d) *Harry is a dentist*.

**Possible Answer:**　　Valid for (a)
　　　(a1)　　Harry is a dentist
∧　(a2)　　A dentist is a tooth-doctor
　　　————————————————————————
⊢ (c) Harry is a tooth-doctor

Invalid for (b)
         (a1)    Harry was a policeman
$\wedge$ (a2)    Harry is a dentist
         _____

$\nvdash$ (c)  A dentist is a tooth-doctor

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1.5.5  Comment on the following syllogism:
         (a1)    Women are cats
$\wedge$ (a2)    Cats are human
         _____

$\vdash$ (c) Women are human

**Answer:** This syllogism demonstrates that a true conclusion can be validly deduced from false premises.

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1.5.6 In English there is a distinction between singular and plural NPs: *one sheep, three sheep*; *one stone, two stones*; etc. What sort of reasoning leads people who were not brought up to speak native standard English to say things like *a trouser, two equipments, some furnitures*?

**Answer:** Inductive.

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1.5.7 Swahili (Bantu, E. Africa), like other Bantu languages, has many noun classes. Human beings (in singular number) mostly go into class one, e.g. *mtu* "person", *mwanamke* "woman", *mtoto* "child", *mzee* "old person", *mgonjwa* "sick person", *mgeni* "traditional doctor", *mwalimu* "teacher", *mpishi* "a cook". But the following singular nouns go into class seven (typically the class for artifacts, diseases, and diminutives): *kibogoyo* "toothless person", *kidurango* or *kibete* "dwarf", *kikaramba* "old crone/old fart", *kinukamito* "unstable, unsettled person", *kipofu* "blind person", *kisiki* "prostitute", *kiwete* "a cripple", *kiziwi* "deaf person". Suggest a reason for this and and for deciding whether your reasoning is abductive, inductive, or deductive.

**Answer:** Abductive reasoning leads to the hypothesis that this *ki*-classification of humans is applied to people who are afflicted, diseased, disabled, or in some way abnormal; it was probably originally a form of disapprobation or insult.

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### 1.6.1 Why use Speaker and Hearer to include "writer" and "reader" respectively, rather than Writer to include "speaker", Reader to include "Hearer"?

**Possible Answer:** Speech is ontogenetically and phylogenetically prior to writing.

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### 1.6.2 Discuss the locution, reference, apparent illocutionary point, and possible perlocutionary effect of (a):
### (a) I'm hungry.

**Possible Answer:** The locution is the sequence of written words constituting the English sentence "I am hungry". The reference of the word 'I' is to whoever writes this sentence. The apparent illocutionary point is to inform the reader that the writer is hungry. The perlocutionary effect of the written sentence is no more than this information – though taken with other contextual material it might be intended to evoke sympathy or elicit some charitable response. *I'm hungry* is more likely to be spoken than written. When spoken it is often a request to be fed or a suggestion that Speaker and, perhaps, Hearer go and eat. In such circumstances, the apparent illocutionary point is on the one hand to issue a request, and on the other a hint or invitation. In both cases the intended perlocutionary effect is that Speaker has a meal.

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### 1.6.3 Exactly why is Speaker's intention described as 'reflexive'?

**Possible Answer:** A reflexive intention is the intention$_r$ to have that intention$_r$ recognized as being an intention. It is reflexive because Speaker's intention is to have Hearer recognize that Speaker intends Hearer to recognize Speaker's intention to communicate with Hearer by means of U.

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1.6.4  How does a messenger fit into the scheme of hearers and overhearers? E.g. Cleopatra addresses Caesar's messenger, Thidias as follows;

> Most kind messenger,
> Say to great Caesar this in deputation,
> I kiss his conquering hand: tell him, I am prompt
> To lay my Crown at's feet, and there to kneel.
> Tell him, from his all-obeying breath, I hear
> The doom of Egypt.
> (Shakespeare *Antony and Cleopatra* III.xiii.88-93)

**Possible Answer:** The messenger here is an indirect or proxy addressee intended to carry the message to Caesar.

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1.7.1  Here is a demonstration that language understanding is a constructive process. Read the following two introductory paragraphs from a story and then try answering the questions below it.

### The Maasai Clans

The Maasai people are divided into two moieties, the one called the Odomong'i (people of the red oxen) and the other the Orok-kiteng' (people of the black cow). These moieties are further subdivided into five, this latter subdivision being the origin of the Maasai clans. This is how the division came about.

  Long ago, at the beginning of time, lived a demigod called Naiterukop, Beginner-of-the-Earth. Naiterukop married two wives. Now, as for the first wife, he gave her red cattle and she was given the bridal name Nadomong'i, She-of-the-red-oxen. It was allowed that she build her house by the gatepost on the righthand side of the gate into the compound.

Now answer the following questions and discuss the basis for your answer, commenting on what it shows about the way we understand language. Where relevant refer to common ground (and/or the lack of it).
- (a) Guess what colour cattle the second wife got.
- (b) Guess what her married name was.
- (c) Guess which side of the gateway the second wife built her hut.
- (d) If the two wives gave rise to the Maasai moieties, where would you guess that the five clans come from?
- (e) What does the title help you to do?

**Possible Answer:** The rest of the Maasai story (retranslated from the Maasai text in Kipury 1983).

Time enough passed for these wives to give birth. The first had three sons. Now, as to the eldest boy, he was called Lelian; it is he who founded the Ilmolelian clan. The next son's name was Lokesen; and for his part, he founded the Ilmakesen. As for the third one, his name was Losero; he it is who, long ago, founded the Iltaarrosero. These clans are customarily called clans of the righthand because their house was situated on the righthand side of the gateway.

For her part, Narok-kiteng' also had children; she had two boys; the one was called Laiser, and he was the one who founded the Ilaiser clan. The one who was called Lukum is the one traditionally said to have given his name to the Ilukumai. And these, for their part, became known as the lefthand clans.

Each clan invented its own earmark so as to be able to identify the ownership of cattle. It became the custom that cattle have the earmark of the family and of the clan put on them. This is still done to this day.

[The linking of the moiety names to cattle is no trivial accident and a number of the Maasai sections are named after the colour of cattle. The importance of cattle to the Maasai pastoralists has no exact parallel among urbanized and agrarian peoples. Cattle are the principal source of food (though this is rapidly changing); they used to be a principal source for clothing, and remain the

source for leather goods. Cattle represent wealth and social standing; they are exchanged to establish social bonds, and have significant uses in ceremony.]

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1.7.2 Our tendency to speculate about (predict) what is likely to happen next in a narrative occasionally leads to 'garden-pathing' (cf. Clark and Clark 1977:80-82) as in *A horse raced towards the gate fell* where many a Hearer pulls up short at the apparent ungrammaticality of 'fell' and has to reprocess the sentence to make sense of it. Explain how you can be 'led up the garden path' by each of (a-c).
(a) A horse raced towards the gate fell.
(b) Our astronomer gazed transfixed at the star racing towards him with her arms outstretched.
(c) Mary is afraid her mother saw her duck behind the curtain. (Her mother hates her to take the bird into the house.)

**Possible Answer:** (a) *A horse raced towards the gate fell* is often first parsed as for (a′) *A horse raced towards the gate* in which the horse is presented as controlling itself, thus the final verb *fell* in (a) seems inappropriate until we reinterpret (a′) as a noun phrase containing a relative clause: "the horse which was (being) raced towards the gate". In (b), *Our astronomer gazed transfixed at the star racing towards him with her arms outstretched*: because astronomers study stars and planets we are primed to interpret 'the star' as a "celestial entity"; the other sense, "celebrated performer" (not necessarily also a heavenly body) has to be reactivated in order to make 'with her arms outstretched' coherent. A somewhat similar story holds for (c) *Mary is afraid her mother saw her duck behind the curtain. (Her mother hates her to take the bird into the house.)* The most likely interpretation of *duck behind the curtain* is that Mary was hiding behind the curtain, but this is only barely consistent with '(Her mother hates her to take the bird into the house.)' in which 'duck' is noun and not a verb.

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1.7.4    In what way does the interpretation of the word *morphology* differ in (a), and *lamb* in (b); and what are the clues to the difference?
$(a_1)$ the morphology of the Basque language
$(a_2)$ the morphology of the whale
$(b_1)$ the lamb frolicked in the field
$(b_2)$ the lamb tasted delicious

**Possible Answer:** The co-text identifies the relevant world spoken of. Thus (a) refers to the word structure of Basque, and (b) to the skeletal structure of whales. (c) refers to a living animal (since only living animals can frolic), whereas (d) refers to meat from the lamb because the predicate 'tasted delicious' is normally only relevant to (cooked) meat from the dead animal.

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1.7.5 Discuss the fact that language treats Speaker and Hearer as being in different locational zones (different places) but not in different time zones. What does this tell you about the differences between speech and writing?

**Possible Answer:** Language first developed as something to be spoken, and speech is still prior to writing even in literate cultures. Whereas the different spatial locations of Speaker and Hearer are obvious to human perception, the difference in time between Speaker making an utterance and Hearer hearing it is not perceivable to the human ear. The existence of telephones (and other forms of electronic communication) makes it possible for someone speaking to be in different time zone from the person listening, but this is not recognized grammatically in any human language. Nor is the the fact that most written language is read at a perceivably different time from the time it is written down, even though forms of writing have been around for about six thousand years.

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1.7.6    Ilocano (Austronesian, Philippines) has the personal pronouns listed below. Show how their semantics

systematically represents components of person deixis in terms of Speaker, Hearer, and third persons.

*co* "I/me"; *mo* "you singular"; *ta* = *co* and *mo* (together); *na* "he/him, she/her, it"; *da* "them"; *mi* = *co* and *na/da* (together); *yo* = *mo* and *na/da* (together); *tayo* = *co* and *mo* and *na/da* (together)

**Answer:** *co* "S"; *mo* "H"; *na* "3.S"; *da* "3.P"; *mi* "S & 3" *yo* "H & 3"; *ta* "S & H"; *tayo* "S & H & 3".

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1.7.7  Which categories of context seem to be used to interpret the italicized pronouns in the following.
(a) When Harry and Sally first met *she* didn't like *him* at all.
(b) *I* want *you* to bring *that* – whatever *it* is – *here*, and put it *there*.
(c) Anna beat Sandra at chess because *she* was the better player.
(d) Anna beat Sandra at chess because *she* was an incompetent player.

**Possible Answer:** (a) Co-text and world spoken of (knowledge of male and female names); (b) situation of utterance (these are all deictic pronouns); (c) world spoken of (knowledge that better players typically win); (d) world spoken of (knowledge that incompetent players are more likely to lose).

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1.7.8  How do evaluations of 'talking to oneself' square with our view that language is primarily a vehicle for social interaction among human beings?

**Possible Answer:** Generally speaking it is seen as unnatural behaviour ('talking to yourself is the first sign of madness') unless one is engaged in a debate with oneself where one shifts between the roles of Speaker and Hearer in order to argue out a position.

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1.8.1 Suppose that Ed, a logician who has five children, is in conversation with Nancy:

> NANCY:   Do you have any children?
>
> ED:   I have two.

Ed did not misunderstand the question. Why is it that although Ed can claim to be telling the truth his answer is misleading?

**Possible Answer:** See Ch.6 for discussion of scalar implicatures assumed in the answers to this question. (a) Because for people who have five children all of (i–iv) are LOGICALLY TRUE:

> (i) they have one child;
> (ii) they have two children;
> (iii) they have three children;
> (iv) they have four children.

(b) The maxim of quantity requires that Speaker make the strongest claim possible consistent with the facts; thus *I have two (children)* is understood to mean "I have no more than two children" – this is a conversational implicature. You might therefore think of Ed's answer as conversationally false, but it is preferably described as INFELICITOUS because it violates the cooperative maxim of quantity.

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1.8.2 What cooperative maxims do you believe might be referred to when accounting for the following interchange; the context is that a car is for sale.

> BUYER:   How much do you want?
> SELLER:   Three thousand.
> BUYER:   I'll give you two.

**Possible Answer:** Here the context makes it plain that the topic for discussion is the price of the car, and the maxim of relation holds this constant throughout. Although no currency is mentioned we presume that it is in the local currency (e.g. dollars). The buyer's question doesn't mention the car, so this is conversationally implicated via common ground and the maxim of relation. The seller's response is also assumed to be relevant to the question; thus it conversationally implicates that s/he wants

$3,000 for the car. The Buyer's response to this demand is meant to be understood as a "reasonable" offer (in some sense). We do not expect a potential buyer to offer more than is asked, nor to make a truly ridiculous offer, thus the implicature (based on all the maxims of the cooperative principle "I sincerely offer you two thousand dollars for the car." If the seller were to accept this offer, the buyer is expected to pay up (under the maxim of quality). If the buyer's offer was intended to be $2 (or two million) and not $2,000 s/he should have made this clear under the maxims of quantity and perhaps manner.

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1.8.3 What do you make of 38 in the main text? (Wants pawn term dare worsted ladle gull hoe lift wetter murder inner ladle cordage honour itch offer lodge dock florist. Disc ladle gull orphan worry ladle cluck wetter putty ladle rat hut, end fur disc raisin pimple caulder Ladle Rat Rotten Hut.) Try translating it into ordinary English and explain the reasons for being able to do so.

**Answer:** (a) Communicative presumption. (b) Reasonableness condition (author intends to communicate something coherent – despite 38 being a violation of the maxim of manner). (c) A phonetic similarity to syntactically well-formed coherent sequences of English words that begin the story of Little Red Riding Hood. It translates: *Once upon a time there was a little girl who lived with her mother in a little cottage on the edge of a large dark forest. This little girl often wore a little cloak with a pretty little red hat, and for this reason people called her Little Red Riding Hood.*

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1.8.4 What maxim(s) can be referred to in accounting for B's response in
    A: What happened to those sausages I left to thaw?
    B: The dog's looking very pleased with herself.

**Answer:** The maxim of relation (relevance). The presumption is that B is acting reasonably and B's utterance is intended to be an appropriate response to A's question. We infer that B's conversational implicature is that the dog has eaten the sausages.

Note that this deduction does not logically follow without invoking the cooperative principle and the resulting conversational implicature.

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1.8.5 Here are some examples of the violation of the manner maxim. Try glossing them and say how you would describe them.
   (a) The cognitive-affective state characterized by intrusive and obsessive fantasizing concerning the reciprocity of amorant feelings by the object of the amorance.
   (b) A manual earth-restructuring implement.
   (c) Localised capacity deficiency inhibiting vehicular ingress and egress.
   (d) Ballistically-induced aperture in the subcutaneous environment
   (e) Nutritional avoidance therapy.
   (f) An outlet for reutilization marketing.

**Answer:** If you like these, they are euphemisms; if you dislike them, they are dysphemisms (Ch.5). (a) love; (b) spade; (c) bottleneck; (d) bullet/shrapnel wound; (e) dieting; (f) op-shop.

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2.2.1 Homonyms can be divided into HOMOPHONES – listemes that sound alike, and HOMOGRAPHS – listemes that are written alike. Can you find examples of homophony and homography in the following?
   (a) Police chase winds through three towns.

                                        (De Beaugrande 1994:172)
   (b) 'Mine is a long and sad tale!' said the Mouse, turning to Alice, and sighing.
       'It *is* a long tail, certainly,' said Alice, looking down with wonder at the Mouse's tail; 'but why do you call it sad?'                              (Carroll 1965:39)

**Answer:** (a) *winds* is a homograph of /wɪndz/ and /waindz/. (b) *tale* and *tail* are not homographs, but they are homophones: /teil/.

2.3.1  In legal philosophy there is a difference of opinion over whether the proper interpretation of legal statutes should be based on the words of a statute or on the presumed intention of law-makers based on external material such as parliamentary reports. How can this difference of opinion be framed in terms of the various types of meaning identified here?

**Answer:** The words of the statute manifest utterance meaning, and the intentions of the legislators constitute speaker meaning.

2.4.1  Distinguish between the sense and reference of *You get out of here by tomorrow*.

**Answer:** The sense is "Hearer quit the place in which the utterance is made by the day after the utterance takes place". The reference is whoever the speaker (say, Mr Flint) is addressing as 'You' (say, Fred) on some occasion (say, Saturday March 13, 1999) telling Fred he must quit the place in which Mr Flint is located when making the utterance (say, the house that Fred is renting from Mr Flint) by the next day (= Sunday March 14, 1999).

2.4.2  John says to Jane *I love you!* He refers to himself as 'I'. What does *I* denote? How does John refer to Jane?

**Answer:** 'I' denotes the person speaking, in this case, John. John refers to Jane as *you*.

2.4.3  What has extension in the following scene (excluding the background enclosed between square brackets), and what is identified as having none:

[*The Chief of Control (Edward Platt) is taking Agent 86, Maxwell Smart (Don Adams), through photos of KAOS agents to see if he can identify a suspect.*]

> MAX: Wait a minute Chief, that's him!
> CHIEF: Impossible!
> MAX: Why? Isn't he a KAOS agent?
> CHIEF: Well yes. But ...
> MAX: Well give me one good reason why it couldn't be him!
> CHIEF: Because that man is dead.
> MAX: I asked you for a good reason, not a terrific one.
>
> (*Get Smart* was created by Mel Brooks with Buck Henry; this 1965 episode was written by Arne Sultan and Chris Hayward)

**Answer:** Max, Chief, and the photograph of the KAOS agent have extension; the agent himself has none. However, the agent did have extension in Max's model of the world being spoken in until the Chief said 'Because that man is dead.'

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2.4.4 Suppose you were asked to discover the name of the first child born in the year 2000. You search the records and report *The first child born in 2000 was Zaphod Beeblebrox*. Whether or not this is true depends WHERE you looked. The international date line runs longtitudinally through the western Pacific, so a child born at 2 a.m. on January 1, 2000 in, say, Fiji, was born 23 hours before a child born at 2 a.m. on January 1, 2000 in Samoa. What does this tell you about conditions on truth?

**Answer:** That truth must be tied to place as well as time.

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2.4.5 Assuming normal conditions of ordinary language use, identify the extensions of expressions in:
(a) My brother is a dentist.
(b) Napoleon was short.
(c) Harriet carried the can.

**Answer:** (a) Speaker's brother and the fact that he is a dentist. (b) A man, most probably Napoleon Bonaparte (né Buonaparte 1769–1821, Emperor of the French from 1804–14), and the fact

that he was short. (c) Either (i) Someone called Harriet and the fact that she was held responsible for something; or (ii) Someone called Harriet and the fact that she was carrying a can (container) using part of her upper body.

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2.4.6   The sense of *water* is "a colourless, tasteless liquid consisting of $H_2O$"; its intension is a colourless, tasteless liquid consisting of $H_2O$; its extension in the utterance *My petrol tank has water in it* is a quantity of $H_2O$ in my petrol tank (if the assertion of its presence is correct). Give a sense, intension, and extension for *muesli* and for *a cat*.

**Possible Answer:** *Muesli*: sense "a breakfast cereal of various mixed products such as oats, wheatgerm, chopped fruit and nuts, etc."; intension a breakfast cereal of various mixed products such as oats, wheatgerm, chopped fruit and nuts, etc.; extension will depend on an utterance in which it occurs, e.g. *Max has bought a packet of muesli* where in the world spoken of there is some muesli in a packet, and Max (who also exists in this same world) has just bought it. *A cat*: sense "an individual from the feline family of carnivorous quadrupeds"; intension an individual feline animal; in an utterance of *A cat has just eaten our parrot* the extension is some murderous feline that has just killed Speaker's pet parrot.

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2.4.7   Have you ever been called by someone else's name, but answered nonetheless? Is it ALWAYS necessary to correct a mistaken reference?

**Possible Answer:** The answer to the second question is "no", it is sometimes preferable to leave Speaker unaware of his/her error – either for diplomatic reasons, or because Hearer has no wish to interrupt Speaker's flow of discourse, or Hearer is apathetic, etc.

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2.4.8   What does it mean to claim that *a bachelor* and *a man who has never married* are logically equivalent?

**Answer:** Whenever one is true, the other is also true; whenever one is false, the other is also false (Ch.6).

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2.4.9 Which of the following are tautologies, and which are contingently true?
   (a) A daughter is a female kinsperson.
   (b) Hitler became the Fuehrer.
   (c) To kill is to cause something to die.
   (d) The star we call *the sun* is hot.

**Answer:** (a) and (c) are tautologies. (b) and (d) are contingently true.

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2.4.10 Russell Hines holds two portfolios in the State parliament: he is both Minster for Mining and Minister for the Environment. In these circumstances do *Minister for Mining* and *Minister for the Environment* have the same (a) intension, (b) extension?

**Answer:** (a) No. (b) Yes.

---

2.4.11 When the President's daughter says *Daddy* she is referring to the President; but does her utterance also denote the President?

**Answer:** Yes extensionally and no intensionally.

---

2.4.12 NPs denoting impossible objects such as *a round square* and *the largest prime number* present a problem for the claim that 'two language expressions differ in intension when it is possible for them to differ in extension.' What is the problem?

**Answer:** The problem is that there is no logically possible world where such language expressions can have extension. The only way out would be to admit that there are worlds that can be spoken of where impossible things have extension; but this is beset with all sorts of problems, starting with how can there ever be such an impossible world? The problem remains.

---

2.5.1 Does *Fred isn't a mormon*: (a) indicate that 'Fred' has extension; (b) subsequently licence the extensionality in the subject of *That mormon tried to convert us* ?

**Answer:** (a) Yes. (b) No, because extension for *is a mormon* is denied. However, *Jerry is mormon* would license extensionality in a subsequent sentence *That mormon tried to convert me*.

---

2.5.2 The idea of individuals performing differently in different worlds and/or times is necessary to understand such things as holding a belief that all politicians are liars, yet at the same time believing the man who tells you your tyre is flat, even though he turns out to be a politician and, in the political arena, is indeed a regular liar. We could represent the difference as follows: in $M^{w_i,t_i}$ the man is believable; in $M^{w_j,t_j}$ the man is not believable. Another example: the most likely interpretation of *In 1946 the President was a baby* is that the baby of 1946 grew up to become president; but the baby and the president exist in two distinct world‑time pairs. Here are two true statements: *Bob Dylan wrote 'Blowin' in the wind'* and *Bob Dylan is Robert Zimmerman*. (a) Discuss the fact that the following is not true without qualification: *Robert Zimmerman wrote 'Blowin' in the wind'*. And (b) discuss the false conclusion in the following: If the Pope had been born a protestant in Northern Ireland he'd be anti-catholic. If he were anti-catholic he'd hate the Pope. Therefore, if the Pope had been born a protestant in Northern Island, he'd hate himself.

**Possible Answer:** (a) Although Robert Zimmerman and Bob Dylan have the same extension, they identify two different roles for the individual – effectively two different but connected worlds separately paired to the same time; we might think of one as a private world, the other as public; in the latter, Bob Dylan is a musician. It is the musician in the public world that is credited with song writing. (b) Once again there are two different worlds: one hypothetical in which the Pope is not the Pope but anti-catholic X who hates whatever individual Y occupies the role of Pope. In the reference world X is the Pope.

---

2.5.3  Which of (a) or (b) is presented as counterfactual. Explain what the meaning difference is.
   (a)  It rained today, so we didn't go to the beach.
   (b)  If it hadn't rained today, we would have gone to the beach.

**Answer:** (b) is counterfactual.

---

2.5.4  In the real world that we inhabit the extension of *unicorn* is identical to the extension of *centaur*, namely null. Do these words have the same meaning? Give your reasons if you think the answer is no.

**Answer:** No. They have different intensions. In a mythological world a centaur has the head and torso of a man, the body and legs of a horse. This distinguishes it from a unicorn which has the head, body, and legs of a horse and a single horn on its forehead.

---

2.5.5  Discuss extension for the NPs and propositions of (a-d).
   (a)  Where did you leave my car?
   (b)  He has neither a pen nor a pencil.
   (c)  Grate me some cheese, will you?
   (d)  If he's written a book, I've never read it.

**Answer:** (a) 'you' and 'my car' would normally have extension along with wherever the car was left. (b) 'He' has extension, but there is no extension for 'a pen' and 'a pencil'. The statement has extension if it is true. (c) There is extension for 'me', 'you', and it is presupposed for 'some cheese' also. The act of Hearer grating cheese it has no extension at the time of utterance, and Speaker wishes to bring it about. (d) 'he' and 'I' have extension in the world spoken in, but Speaker doubts extension for "him" having written a book (and therefore doubts extension for 'a book'); Speaker further denies extension for "Speaker having read the book", even supposing the book did exist in some world.

---

2.5.6 Explain what is peculiar about *Fred's bald, so he's gone for a haircut*.

**Possible Answer:** The event of Fred going for a haircut is presented as a consequence of his being bald. The set of worlds in which Fred is bald is identical to the set of worlds in which he has no hair, or very little hair; under these conditions there seems to be a inconsistency, since there is an implied lack of extension for any hair to be cut. (This is not to deny that bald men have their hair cut, but that being bald is a reason to have one's hair cut.)

---

2.5.7 How can *There might be some eggs left* be related to the extensionality of *There are some eggs left*.

**Possible Answer:** *There might be some eggs left* can be paraphrased "it is possible that there are some eggs left" (see Ch.11).

---

2.5.8 Assuming some typical context for use in everyday English, discuss the extension of the italicized expressions in (a–h).
   (a) My mother is knitting me *a sweater*.
   (b) My cousin sent me *a postcard* from *Fiji*.

(c) *The accident* could have been prevented.
(d) *Bruce nearly crashed the car.*
(e) *Erica dropped the cup.*
(f) The vicar didn't realize that *Eric was Eric Clapton.*
(g) Roseanne dreamt that *she was Elle MacPherson.*
(h) *Nicole's dream* was that she could play tennis like Martina.

**Answer:** (a) The English progressive indicates that the action is currently not completed; it may be underway or it not even have begun, i.e. this sentence is ambiguous between *My mother is going to knit me a sweater* and *My mother has been knitting me a sweater*. In other words extension for 'a sweater' is predicted for some future world, and there may or may not be already a part of it in existence at the time of utterance. (b) Both have extension. (c) Has extension. (d) Here 'nearly' indicates that the proposition 'Bruce crashed the car' has no extension. 'Bruce' and 'the car' both have extension. (e) 'Erica', 'the cup' and 'Erica's dropping of the cup' all have extension. (f) *Realize* is a propositional attitude verb. Speaker is here claiming that the vicar recognizes an extension for someone called Eric but fails to recognize that Eric's full name is Eric Clapton. The reporter knows that Eric is Eric Clapton and the vicar doesn't; so, Eric exists in the vicar's world and Eric Clapton exists in the reporter's world; the reporter recognizes the connection between the two worlds, i.e. Eric = Eric Clapton, but the vicar doesn't. Think about what happens with the positive *Eventually, the vicar realized that Eric was Eric Clapton*. (g) Roseanne has extension in the world in which she dreams, but not in the same world as the content of her dream. In the dream world she has an alter ego, which in the dream world is Elle MacPherson – presumably a counterpart to the real world Elle MacPherson with whom she will share some (perhaps only very few) properties. (h) If Nicole has extension in this real world, so does her dream – though the content of her dream is in a dream world, not this one.

2.5.9 Disambiguate the extensionality of the object NP in *I'm looking for someone who speaks Arabic*.

**Answer:** (a) Extensional: *I'm looking for someone, and the way you'd know her is, she speaks Arabic.* Or, *I'm looking for the man who speaks Arabic.* (b) Non-extensional: *I'm looking for anyone who can speak Arabic.*

---

2.5.10  Compare and comment on (a) and (b):

(a) There are some chocolates, $\left\{\begin{array}{c}\text{??so}\\\text{but}\end{array}\right\}$ Harry can't have any.

(b) There aren't any chocolates, $\left\{\begin{array}{c}\text{so}\\\text{??but}\end{array}\right\}$ Harry can't have any.

**Possible Answer:** (a) Why mention that there are chocolates unless someone is expected to eat them? It is this normal precondition on uttering the first clause of (a) which renders the 'so' of the second clause inappropriate: 'so' mischievously indicates that the denial of chocolates to poor Harry is a consequence of there being some chocolates to hand. Because 'but' typically introduces a proposition that is contrary to expectation, it is the most appropriate coordinator here. The opposite obtains in (b): the coordinator 'so' appropriately introduces a consequence of there being no chocolates. The conclusion that Harry can't have any follows the premise naturally, hence it is inappropriate for it to be introduced by 'but'.

---

2.5.11  Are (a) and (b) equally ambiguous as to the extension of '... Versace jacket'? [In (b), suppose 'this' is indefinite, not demonstrative.]
(a) Emma told me she wanted to buy a Versace jacket, but Harry dissuaded her.
(b) Emma told me she wanted to buy this Versace jacket, but Harry dissuaded her.

**Answer:** (a) is ambiguous, it could be that Emma just wanted some jacket designed by Versace, but had no particular one in mind; or it could be that there was a particular jacket she wanted to buy. On the other hand (b) is never ambiguous – whether 'this' is indefinite or is demonstrative, the NP *this Versace jacket* has extension (according to Speaker).

---

2.5.12  Suppose Julie offered Tom not a box of chocolates from which to choose one, but just held out a single chocolate for him saying *Have a chocolate*. On this occasion is the NP 'a chocolate' specific or nonspecific?

**Possible Answer:** On this occasion there is a specific chocolate on offer.

---

2.6.1  Comment on the extensionality of 'low-cut dress' and the anaphoric 'one' or 'it' or 'them' in the following:
   (a) I shan't wear a low-cut dress, because I look stupid in one.
   (b) I shan't wear a low-cut dress, because I'd look stupid in it.
   (c) I shan't wear a low-cut dress, because I look stupid in them.

**Possible Answer:** In (a) the reason clause contains an implicit *a(n)-* generic and is understood as "I look stupid in a low-cut dress". There is no extension for 'one'. In (b) the reason clause is subjunctive and can be paraphrased "if I were to wear one, I would look stupid in it." Here 'it' has extension in an imagined world where Speaker does wear a low-cut dress, but no extension in the world spoken in. Notice that *it* cannot replace the 'one' of (a), but *one* could be used instead of 'it' in (b); the consequence would be to make a generic statement true for the imagined world created by the subjunctive. In (c) 'them' is the pronoun for the unmarked indefinite generic, i.e. the reason clause is understood in terms of "I look stupid in low-cut dresses". It has extension.

**2.6.2** In *Lions are dangerous* the intension of 'lions' is a genus; the extension is by implication the class of lions in the world and time spoken of as well as in all other worlds and times. Give a sense, intension, and extension for 'unicorns' in *Unicorns are mythical beasts*.

**Possible Answer:** Sense: "mythical horses with a single straight horn in the middle of the forehead". Intension: mythical horses with a single straight horn in the middle of the forehead. Extension: a genus of horses with a single straight horn in the middle of the forehead in a mythical story book world of fantasy.

**2.6.3** Some generics state contingent truths, others necessary truths: which of (a-b) is contingently true and which necessarily true? Is there any connection between (a-b) below and 46-47 of the main text?
(a) Spiders are arachnids.
(b) Spiders have eight legs.

**Possible Answer:** (a) is necessarily true and (b) contingently true. (a) is comparable with 47, and (b) with 46.

**2.7.1** It was said of 60, *Catch $_[$a chicken$_1$ $_]$. Kill $_[$it$_2$ $_]$. Pluck $_[$it$_3$ $_]$. Draw $_[$it$_4$ $_]$. Cut $_[$it$_5$ $_]$ up. Marinade $_[$it$_6$ $_]$. Roast $_[$it$_7$ $_]$. When you've eaten $_[$it$_8$ $_]$, put $_[$the bones$_9$ $_]$ in the compost* that a file is built up on successive states of the chicken, that links the nine references to it. Is there also a file built up on the actor, and what will be in it?

**Answer:** Yes, there is a file built up that gives a history of the actor's participation in events in model M.

**2.7.2** There are anaphors for sentences. How would you interpret the italicized pronoun of (a)?

1. Emily was having an affair with Bill, but Ivy didn't know *it/that*.

**Answer:** (That) Emily was having an affair with Bill.

---

2.7.3 Why can't we say instead of 78: *Bring Harry, I love the thing* – after all, Harry is a thing? Note that instead of 79 we can say *Don't bring that spider near me, I loathe those creatures*.

**Possible Answer:** *Bring Harry, I love the thing* refers to a person as a 'thing' which implies that Harry is an inanimate object and not merely a physical object. However, this can't be the whole story because spiders are animate, and in 79 they are referred to by 'things'. A human being can be referred to as a creature – more likely in an insult than in an expression of love: *Don't bring Harry, I loathe the creature*. This is not so far down the animacy hierarchy (cf. *Harry is a reptile*) in which humans outrank animals which outrank inanimates.

---

2.7.4 Discuss the pairs of italicized constituents in the following.
   (a) Tom asked *Ed $_{[}\varnothing_{]}$* to come.
   (b) Where is *it, Lamu*?
   (c) *No schoolkid with an attitude* wears *their* baseball-cap peak to the front.
   (d) Harriet never *wears red*, because *it* doesn't go with her hair.
   (e) Shiela has lots of *boyfriends*, but Ed is the only *one* with charm.
   (f) Shiela has lots of *boyfriends*, but *Ed* is the only one with charm.
   (g) Harry paid *fifty bucks* for his, but mine was *cheaper*.

**Answer:** (a) Syntactic rules demand a zero anaphor for Ed as the subject of the infinitive (subordinate) clause; a subjunctive clause introduced by the indirect question marker *if/whether* would need the subject pronoun, however: *Tom asked Ed if he would come*.

(b) Here 'it' is cataphoric for the place name *Lamu*, which is right-dislocated. Place names (like day names) are treated like other NPs, despite being semantically locative. The locative pronouns *here* and *there* mean "this place" and "that place", i.e. they include a demonstrative element that is not in *it*. (c) 'Their' is nonextensional and also gender neutral, like *schoolkid*. (d) '[I]t' refers to the colour red; the second (reason) clause in the sentence invites us to imagine a world in which Harriet does wear red, and in that hypothetical world the red clashes with the colour of her hair. That is why she never wears red. (e) Here 'one' indicates semantic identity with *boyfriend*. (f) Because of the co-text and the fact that *Ed* is semantically masculine, we understand that Ed is one of Shiela's boyfriends; note how strange it would be to say !!*Shiela has lots of boyfriends, but Susie is the only one with charm*. (g) Here 'cheaper' is understood in comparison with 'fifty bucks'.

---

3.2.1   From what aspect do you access the lexicon when performing the following tasks?
(a) What word means "a vehicle you sit astride and propel by pedalling"?
(b) What is a homonym of *tail*?
(c) How many verbs can you list with a past tense form like that of *ride*?

**Answer:** (a) Meaning: you are given a meaning to match with a form; you know that you are seeking a noun. (b) Form, *tale*: the morphosyntactic category is irrelevant – think of a word homophonous with the past tense verb *led*, and one answer is the noun *lead* (a metal). (c) Morphosyntactic category.

---

3.2.2   Where is the normal primary stress location in the following English listemes, uttered in isolation: *perception, conception, affirm, affirmation, -ize* (as in *legalize*), *-ity* (as in *topicality*).

**Answer:** *PerCEPtion; conCEPtion; afFIRM; affirMAtion*. When the morph is uttered in isolation, *-IZE*; but when suffixed to a noun or adjective, primary stress falls wherever is normal for the stem, e.g. *LEGalize*. When the morph is uttered in isolation, *-ITy*; but when suffixed to an adjective, primary stress falls on the syllable before *-ity*, e.g. *topiCALity*.

---

3.2.3 What kind of context would justify the use of (a) and how would you interpret it?
(a) pho**TO**graphic = /fəˈtɒɡrəfɪk/

**Answer:** Sentence stress (Bolinger 1972 calls it 'accent') focuses on that part of the utterance where the most significant information is located. So-called secondary and tertiary stress is of no semantic consequence: non-primary stress is a function of vowel tensing. Word-stress in English is located within the word at the syllable where the sentence stress would fall if that word were in focus; putting primary stress on some other syllable within the word focuses on that syllable, and is only permissible when there is good reason to do this, e.g. correcting pronunciation: *It's photo**GRA**phic not pho**TO**graphic* /ɪts foutəˈɡræfɪk nɒt fəˈtɒɡrəfɪk/. (i) is normal for the pronunciation of the word in isolation, but in (ii) secondary stress is placed on the third syllable resulting not in a variation in meaning, but simply a mispronunciation because tensed /æ/ is substituted for lax /ə/.

(i) photo¹graphy         /fəˈtɒɡrəfɪ/

(ii) photo¹gra²phy      /fəˈtɒɡræfɪ/

---

3.3.1 What does the revised version of indexing the components in the hypothetical lexicon do to the idea of linking multilingual lexicons?

**Answer:** It will pose difficulties if the morpho-syntactic category is different in two of the languages.

### 3.4.1 Why are there specialist dictionaries and specialist encyclopedias?

**Possible Answer:** The student of zoology will need to know things that the student of linguistics does not, and vice versa. The sum of human knowledge is too large to fill any one encyclopedia; and the vocabulary of all the disciplines is too great for any single lexicon to encompass.

### 3.5.1 In a counterfactual world Aristotle's parents might have named him *Eudoxus* instead of Aristotle. If Aristotle hadn't been called Aristotle, would that undermine Kripke's claim that the name *Aristotle* is a rigid designator?

**Answer:** No. Assuming the boy turned into a man who did everything we attribute to the actual Aristotle, all these things would be attributed instead to Eudoxus, and that name would rigidly designate the man in our counterfactual world that is attributed to Aristotle in the factual world.

### 3.5.2 In Ch.2 we discussed the meaning of *God does not exist*. Is 'God' a rigid designator? Explain your answer.

**Answer:** Whether or not anyone believes that God exists, and whatever may fix the reference of *God* in an individual's mental encyclopedia, the word does rigidly designate. It may be that in different communities the same name designates differently, in which case there is more than one entity bearing the name *God*, just as there is more than one bearing the name *Paul*.

### 3.5.3 If *Cicero hailed the news of Caesar's murder* means the same as *Tully hailed the news of Caesar's murder*,
  (a) What does this tell you about Cicero and Tully?
  (b) Try to explain why it is that *Sam believes that Cicero hailed the news of Caesar's murder* does not mean the

same *Sam believes that Tully hailed the news of Caesar's murder*?

**Answer:** (a) Cicero and Tully are one and the same person, i.e. *Cicero* rigidly designates the same person as does *Tully*. (b) The fact in (a) is contingent, and might not be known to Sam.

---

3.5.4 Discuss the likelihood that car models will be named after farmyard animals such as pig, cow, and goat.

**Answer:** It is unlikely unless attitudes towards these animals, or towards cars, changes a great deal.

---

3.6.1 (a) Are the two referents for *Elizabeth Taylor* identified successfully in the first paragraph of this section?
(b) In what way are they distinguished?
(c) Is there one rigid designator here, or two?

**Answer:** (a) Hopefully. (b) They are distinguished by citing encyclopedic facts to differentiate them: one is 'listed in the 1989 Tucson, Arizona, phone directory' the other is 'the frequently husbanded British-born movie-star'. Appealing to our encyclopedic knowledge, it is, of course, assumed that 'the frequently husbanded British-born movie-star' is not listed in the 1989 Tucson, Arizona, phone directory. (c) In each of the examples in the text, there is a pair of homonymous rigid designators: *Elizabeth Taylor* $\times$ 2, *London* $\times$ 2, and *Boulder* $\times$ 2.

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3.6.2 How do books of names, e.g. for new borns, differ from any other specialist lexicon?

**Answer:** They don't.

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4.2.1 The difference between etic and emic is primarily a difference between concrete, physically manifest forms (etic)

and abstract theoretical constructs (emic) which looks in the present instance "PLURAL" very much like meaning. But it is sometimes said that an utterance is the etic counterpart of emic sentence; and, of course, the English phoneme /p/ has the etic allophones [p], [pʼ], [pʰ]. (a) Does it still look as if etic categories are form and emic categories meaning? (b) Is there a correlation between emic and intensional, etic and extensional?

**Possible Answer:** (a) No. (b) The allophone [pʰ] is a realization of phoneme /p/ in some particular utterance, and this parallels the fact that the true proposition "Harry is sick" in M$^{w,t}$ is a realization of the sentence *Harry is sick* and an extension of its intension. There is certainly such a parallel, and a similar kind of relation holds between etic and emic as between extension and intension; nevertheless, most scholars would not have them identical.

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4.2.2  If the emic to etic correlation for *cat(s)* is as follows

| Emic | **cat′**.PL | **cat′**.S |
|------|------------|-----------|
| Etic | *cat⌢-s* | *cat* |
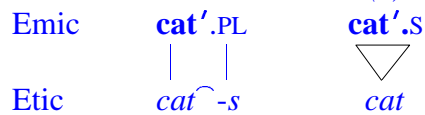
What is the distribution of morphemes to morphs in *sheep* [PL] and *sheep* [S]?

**Answer:**

| | Emic | **sheep′**.PL | **sheep′**.S |
|--|------|-------------|-------------|
| | Etic | *sheep* | *sheep* |

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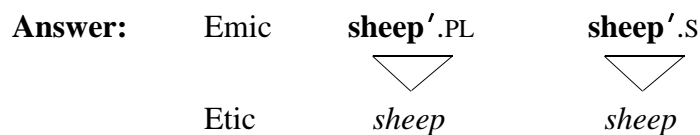
4.2.3  Discuss the following as effector nominals: *truck-driver, butcher, butler, cleaner, cooker, lawn-mower, lawyer, mixer, toaster.*

**Answer:** Compounds like *truck-driver* (cf. *bus-driver, train-driver, headteacher, roadrunner*, etc.) do not derive from a compound verb *\*truck-drive* (etc.) since none exists. The effector suffix *-er* attaches to the verb *drive* (see Carstairs-McCarthy

1992:112ff for discussion). *Butcher* and *butler* fit the pattern for effector (agentive) nominals, but there are no corresponding verbs. *Butler* is etymologically related to *bottler* "one who handles bottles", but the usual verb is the zero-derived *butler*. Back-formed verbs like *\*butch* and *\*butle* have occurred but never caught on. *Lawyer* "one versed in the law" may have been deverbal (the *-y-* is epenthetic), there once was a verb *law* "to go to law". *Cooker* is an instrumental nominal, blocked from an agentive interpretation "person who cooks" by the prior existence of the noun *cook* with this sense. The mostly likely interpretations of *lawn-mower* and *toaster* are also instrumental; persons who regularly mow are gardeners and so the agentive interpretation will normally be blocked; similarly, someone who regularly toasts will be a cook; in both cases the *-er* nominal is freed to denote the instrument for V*ing* (gerund). *Cleaner* is truly ambiguous between the agentive and instrumental interpretations. *Mixer* is also ambiguous, but the contexts for use are radically different: as an agentive nominal it comments on social skills (*she is a good/bad mixer*); alternatively, it names an instrument for mixing a wide range of products from cement to food.

---

4.2.4 Why do you think we have, in English, *drumm**er*** but *percussion**ist***, and *fiddl**er*** but *violin**ist***?

**Answer:** The most likely explanation is the existence of the verbs *drum* and *fiddle* that form the root of the effector nominal in *-er*, whereas *-ist* is suffixed to nouns *violin, percussion, pian(o), organ, saxophon(e)*, etc. However, *drum* and *fiddle* are words of Germanic origin whereas the other musical instrument names are not.

---

4.2.5 *Cherry* and *pea* were sort of backformations. Look up their histories.

**Possible Answer:** *Cherry* from Romance *c(h)erise*; *pea* from *pease*. In both cases the earlier form ending in /z/ came to be

interpreted as plural. This kind of back-formation is also called REANALYSIS.

---

**4.2.6** Identify the root and intervening stems of the verb [*to*] *waitress*.

**Answer:** Root = $_{[V}$**wait′**$_{V]}$ ("serve" as in *wait tables*); agentive nominal $_{[N}$*wait⁀er*$_{N]}$; female suffix *wait⁀er⁀ess* ⇒ $_{[N}$*waitress*$_{N]}$ (one of the few nouns in *-ess* still widely acceptable at the time of writing, though the gender neutral *server* is catching on); zero-derivation by $_{[V}∅_{V]}$: $_{[N}$*waitress*$_{N]}$ ⁀ $_{[V}∅_{V]}$ ⇒ $_{[V}$*waitress*$_{V]}$.

---

**4.2.7** Is the prefix *in-* of *invincible* the same prefix as that in: (a) *impossible*; (b) *ingressive*; (c) *illicit*; (d) *ill-conceived*; (e) *inevitable*?

**Answer:** Yes for (a), (c), (e) which are also prefixed with the Latinate negative *in-*. No for (b) and (d). (b) has the Latinate locative prefix meaning "in". (d) is a compound: the initial *ill* in (d) is the Old Norse word meaning "bad, evil, ill".

---

**4.2.8** Does the order of affixation have semantic consequences? Compare *reundoable* with *unredoable*.

**Answer:** Yes. *Reundoable* "can be undone again"; *unredoable* "can't be done again".

---

**4.2.9** Consider *abbot, abbess* and *abbey*. Etymologically, *abbot* derives from Latin *abbatem* (accusative of *abbas*), *abbess* from *abbatissa*, and *abbey* from *abbadia*. But does it make sense to say that for modern English the bound morph(eme) *abb-* has a specific meaning, as does *-ess*; perhaps *-ot* can be linked to the final syllable of *bigot, patriot, pilot* (except these are not now restricted to males), and *-bey* to the *-by* in place names ("inhabited place")?

**Answer:** Yes.

---

How would you analyze into morphemes: (a) *admissible*; (b) *readable*; (c) *possible*; (d) *invincible*?

**Answer:** (a) $_{[V}$**admit**$'_{V]}\frown_{[Adj}$**-ible**$'_{Adj]}$ ⇒ Adj. The Latinate prefix *a(d)-* roughly "towards" can be stripped off, it recurs in *advert* (V), *adduce*, *ascend* and many other verbs. The Latinate root verb *-mit/-miss* roughly "put, send" recurs in *permit, omit, submit*. The suffix *-(i)ble* also *-able* has become confused with the English word *able* and adopted its sense.

(b) $_{[V}$**read**$'_{V]}\frown_{[Adj}$**-able**$'_{Adj]}$.

(c) Despite appearances, there is no good reason to divide *possible* into *poss-* and *-ible*, because the stem *poss-* has no meaning outside of *possible* and *impossible* – and none within them, either. It derives from the Latin *potis* "able".

(d) Realistically, *invincible* should not be carved up, but etymologically it consists of the Latinate negative prefix *i(n)-* also found in *inopportune, impatient, illegitimate, irrational*, etc.; the suffix *-(i)ble* discussed in (a); and the Latinate root *-vi(n)ce* that occurs in *victor, convince, evince, province*, etc. To the historical semanticist this is valuable and interesting. To a semanticist describing today's lexicon its usefulness is doubtful.

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4.2.11 It is common for the meaning of novel zero-derivations to be predictable, as in the following parody.

> General Alexander Haig has contexted the Polish watchpot somewhat nuancely. How, though, if the situation decontrols can he stoppage it mountingly conflagrating? Haig, in Congressional hearings before his confirmatory, paradoxed his auditioners by abnormalling his responds so that verbs were nouned, nouns verbed, and adjectives adverbised. He techniqued a new way to vocabulary his thoughts so as to informationally uncertain

Explain how you figure out the meanings of the verbs 'contexted', 'abnormalling', 'vocabulary', the nouns 'confirmatory', 'responds', the adverb 'mountingly' and the Adv⌢V 'informationally uncertain'.

**Possible Answer:** There is no problem inferring the meaning of the verbed nouns from a basic matrix MAKE N and adjusting this until it is appropriate to the local context. E.g. 'has contexted NP' ⇒ "has made context NP" ⇒ "has made a context for NP" ⇒ "has put into context NP". '[T]o vocabulary NP' ⇒ "to make vocabulary NP" ⇒ "to make vocabulary for NP". Similarly the nouns are interpreted as entities (things). The adjective 'confirmatory' denotes that something has been confirmed; the noun from this must refer to an occasion at which something has been confirmed. '[I]nformationally uncertain' (analogous with *badly maul*) is tricky. To say *X is informationally inaccurate* means "The information in X is inaccurate"; thus *X is informationally uncertain* means "the information in X is uncertain". The verb *uncertain NP* means "make NP uncertain". *Informationally uncertain NP* therefore means "make NP uncertain as to the information they hold or are being given". In this case, NP = 'anybody listening', thus we understand from 'so as to informationally uncertain anybody listening about what he had actually implicationed' that Haig makes his listeners uncertain about what he really means.

---

4.2.12  Describe the relationship the following homonymous nouns and verbs: *lamb, bicycle, button, chair, neck, group, stack, heap, loop*.

**Comment:** Note the great variety in these relationships.

---

4.2.13  Compare the denominal verbs in **salt** *the potatoes*, **dust** *the crops*, and **dust** *the furniture*.

**Comment:** The point is that the verb *salt* means "put salt onto/into", and although *dust* can also mean "put dust onto" – as in *crop-dusting* – in the context *dust the furniture* 'dust' means "take dust off (the furniture)".

---

4.2.14  Do you think it is just accidental that the verb *father* is ambiguous in a way that the verb *mother* is not, and that there are no conventional verbs *sister, brother*?

**Possible Answer:** According to the *O.E.D.* all these kin terms have been used as verbs, so individuals may differ in their opinions of the following remarks. The verbs *brother* and *sister* are uncommon; they can mean "be a brother/sister to" and more likely "be like a brother/sister, treat as a brother/sister would". The verb *mother* can mean "bear a child" but it is more likely to mean "be like a mother, treat as a mother would". This is because of the blocking action of verbs like *bear, give birth to, have (a child)*. On the other hand the verb *father* can mean "be like a father to, treat as a father would", but it is more likely to mean "beget" – perhaps because (or as) *beget* has become archaic.

---

4.2.15  How come you can *bicycle to work* and perhaps *bus to work* but not *car to work, train to work* "travel to work by train". Discuss.

**Possible Answer:** None of these vehicle nouns happily converts to a verb, except *bicycle*, and that could be influenced by the synonymous verb *cycle*; note that *motorcycle to work* is also OK. You can *bus children to school* but it is odd to *bus (yourself) to work*. The best verbs seem to be (i) *ride* (mostly bikes of all kinds, horses, etc.); (ii) *drive* a car/bus/motorbike/etc. which blocks \*car(r)ing to work; and (iii) *take/get* a/the bus/train/taxi.

---

4.3.1.1  How far can you generalize on the compound *redhead*?

**Answer:** You can't. *Redhead* denotes someone with (so-called) red-hair; but hair colour won't sanction *\*brownhead, \*blondhead, \*greyhead*; and a *blackhead* is a pimple not a person. Hair colour does give us *grey-power* "empowerment of the elderly" and there are also *greybeards* "old men".

---

4.3.1.2 The following words are BLENDS (cf. Lehrer 1996), suggest how each one is derived, and offer comments on the possible meaning: (a) *smog*; (b) *brunch*; (c) *workaholic*; (d) *wargasm*; (e) *shopathon*; (f) *shampagne*. An novel kind of blend is (g) *ambisextrous*.

**Answer:** Traditionally blends derive from END-CLIPPING (clipping the end from) one word and FORE-CLIPPING another, though Lehrer 1996 retains 'clipping' for something that can be a lexeme in its own right, and refers to the parts of a blend as SPLINTERS (from Adams 1973). (a) (*smoke + fog*) ⇒ (sm- + -og) = *smog* "combination of fossil fuel fumes and water vapour". (b) (*breakfast + lunch*) ⇒ (br- + -unch) = *brunch* "meal that combines breakfast and lunch". (c) (*work + alcoholic*) ⇒ (work + -/ə/holic) "someone who can't stop working"; (d) (*war + orgasm*) ⇒ (war + -gasm) = *wargasm* "the climactic excitement of war"; (e) (*shop + marathon*) ⇒ (shop + -athon) "shops open well beyond normal shopping hours"; (f) (*sham + champagne*) ⇒ "a drink that masquerades as champagne, but isn't". This one is only a visual blend. (g) (*ambidextrous + sex*) ⇒ (ambi...[ex]trous + s[ex]) = *ambisextrous* "bisexual". In Lehrer's terminology, (a) and (b) each consist of two splinters; (c), (d), (e) and (f) of one; and (g) of overlap. A word like *palimony* has no splinters.

---

4.3.1.3 Does hyphenation in the graphological form define a compound?

**Answer:** No. Bauer 1992:101 demonstrates the lack of consensus by listing: *girlfriend* (Hamlyn's *Encyclopedic World Dictionary*), *girl-friend* (*The Concise Oxford Dictionary*), *girl friend* (Webster's *Third New International Dictionary*). However,

hyphenation is a typographical means of indicating unconventional compounds, e.g. *un-get-at-able, Monday-morning-itis*.

---

**4.3.1.4** How would you explain the following data?
*my* hand-*me*-down, *your* hand-*me*-down, *his* hand-*me*-down, *your* hand-*you-down*,
*his hand-*him-down*, she is a stay-at-home, she is a *stays-at-home*.

**Possible Answer:** Because they are lexemes, there is no other kind of morphological variation within compounds than is proper to their lexical class, e.g. no kind of agreement, so that one says *my* hand-*me*-down, *your* hand-*me*-down, *his* hand-*me*-down not *your* hand-*you-down, his hand-*him-down* etc., and *she is a stay-at-home* not *she is a *stays-at-home*.

---

**4.3.1.5** Many women are quite happy to be *Madam Chairman* and many speakers of English do not believe this phrase is a blatant contradiction. Explain. (This is a linguistic question and not primarily about sexual politics.)

**Answer:** It is because the compound *chairman* is no longer a transparent combination of **chairʹ⌢manʹ** "the man in the chair" but simply indicates an office "the person who presides over (manages) a meeting". Note that when one addresses 'the Chair' in a meeting it is an instance of metonymy (Ch.5).

---

**4.3.2.1** With compound verbs, where do the verb inflexions apply?

**Answer:** Always on the word which is the homonym of an independent verb. E.g. the bolded parts of *over***take**, **take** *over*.

---

4.3.3.1  The etymology of *rain cats and dogs* is obscure; the most plausible suggestion is that *cats and dogs* is a reinterpretation of Greek *catadupa* "cataract, waterfall". If correct, this would be a case of FOLK ETYMOLOGY. (a) One kind of folk etymology is reanalysis of the nouns that are today *apron, adder, orange* (and, if you are Australian, *ocker*), *nickname* and *pea*. (b) Another example is *I could **of** done it*. (c) A third kind is exemplified by the distress call *Mayday*, the score *love* in tennis, the phrase *check mate* in chess, and the compound noun *chaise lounge*. For all (a,b,c), find the original forms and explain what probably happened.

**Possible Answer:**

(a) *Apron* ⇐ *napron* (cf. *napkin*), *adder* ⇐ *nadder*, *orange* ⇐ Arabic *nāranj* (Persian *nārang*), *ocker* ⇐ *knocker* (this is perhaps apocryphal). The assumption is that, e.g. *a͡nadder* pronounced /əˈnædə/ got reanalyzed into *an͡adder* same pronunciation. A *nickname* is a reanalysis of *an ekename* ('eke' = "also"). If you know the nursery rhyme that begins *Pease pudding hot*, you have met the pre-1600 singular and plural form for "pea". *Peas(e)* was then reanalyzed as a regular plural of *pea*.

(b) Much of the time both *of* and many instances of *have* (particularly following a modal) have exactly the same pronunciation /əv/, /v/, or /ə/ (cf. the written forms *cuppa* and *coulda*). They become confused and *of* usually replaces *have*, both in writing and pronunciation, e.g. /kʊd ɒv/.

(c) *Mayday*: English speakers make recognizable English morphs from French *m'aidez* "help me". The tennis score *love* derives from French *l'oeuf* "the egg": the French expression was a kind of euphemism based on 0 being roughly eggshaped. *Check mate* is from Persian *shāh māt(a)* "the king is dead". *Chaise lounge* is a sort of metathesis from French *[chaise] longue*, being confused in this context with *lounge [chair]*.

4.3.3.3 Expressions like *as old as Methuselah, as old as the hills* and *as dry as a bone* are similes that have become clichés. What distinguishes a cliché from an idiom?

**Answer:** A cliché is a stereotyped expression or commonplace phrase, and an idiom may be a cliché, but the meanings of many clichés are computable from their constituents – as in the case of *as old as the hills*; however, this needs to be listed in the lexicon because it is  a cliché whereas *as old as the mountains* is not.

---

4.4.1  Try to match the onomatopoeic words (1-8) from languages other than English with their meanings (a – h).

(a) thunder (crash)
(b) zigzag; every which way
(c) head over heels; tottering, stumbling
(d) thunder (boom)
(e) insistent rapping on the door
(f) pop-pop, sound of fried millet or a motorbike
(g) jouncing from side to side
(h) rope going taut

  (1) hɔlithɛli          (2) kpuk-kpuk-kpuk

  (3) qi                 (4) ɔliali

  (5) pô$\textipa{P}$-pô$\textipa{P}$          (6) t'um•    ([t'] is ejective)

  (7) túlipāli           (8) t'o•x̣

**Answer:** (a)=(8) in Nez Perce (Penutian); (b)=(1) in Lahu; (c)=(7) in Lahu (Lolo-Burmese); (d)=(6) in Nez Perce; (e)=(2) in Gbaya (N. Volta-Congo); (f)=(5) in Lahu; (g)=(4) in Lahu; (h)=(3) in Nez Perce.

---

4.4.2  What other voice qualities do you think might have a natural rather than an arbitrary basis? Hinton, Nichols, and Ohala (1994b) identify a category of corporeal sound symbolism. This includes involuntary sounds like sneezes (*Achoo!*), shrieks of pain (*Ouch! Aaaugh!*), coughs, the effects of diseases such as colds and emphysema, the effect of

emotional stress such as excitement or fear. (a) Do these fit into the sound system of the language, do you think? (b) Do speakers make any deliberate use of any of them?

**Answer:** (a) At best they are paralinguistic, e.g. whispering can be the result of a sore throat; breathiness can be the result of lung infection or strenuous exercise, etc. The deeper breathing and tensed muscles that are symptoms of anger give rise to greater amplitude and tenser vowels than normal when speaking angrily. (b) Huskiness as the result of deep emotion, is exploited to indicate sexual arousal. Crying or screaming may be partly or wholly motivated to gain attention. Coughing is used to attract attention and/or take the floor in a conversational interaction. Laughing shows camaraderie. Etc.

---

### 4.4.3 What differences do you see between onomatopoeia, phonesthesia, and ideophones?

**Possible Answer:** Onomatopoeic WORDS imitate sounds. Phonesthemes are morphemelike constituents of words, phoneme clusters that have a common element of meaning in one or two word classes of a language. Ideophones/expressives are a 'vivid representation of an idea in sound' and unlike a phonestheme are a part of speech that modifies a clause constituent, typically the predicate – therefore they are often adverb-like.

---

### 5.2.1 The use of the noun *man* or *mankind* for "homo sapiens, human beings" and the use of the generic masculine pronouns *he, him*, etc. for both males and females (as in 'the reader should always keep the distinction at the back of his mind' Allwood et al. 1977:22) is condemned for being sexist. Does the condemnation arise because of the connotations of such usage?

**Answer:** Many people believe that the use of *man(kind)* for "human beings" is dysphemistic to women because it connotes the domination of men over women. Terms such as *human*

*beings, humankind* are preferred because they explicitly include both sexes.

---

**5.3.1** Explain King Henry V's reaction in the quotation from Shakespeare's *King Henry IV Pt2* at the head of this section.

**Answer:** Falstaff and Pistol address the new King with the intimate (at best casual) forms they used to use to wild Prince Hal; they should now be using formal if not frozen forms of address. The intimate forms seek to put them on the same social footing as the King, hence King Henry's description of Falstaff as 'that vain man', and the Lord Chief Justice's rebukes. Because Falstaff persists, King Henry is forced to reject him. Egalitarianism was totally inappropriate when the monarch was perceived to be just one step down from God.

---

**5.3.2** Try to assign the following to one (at most two) of the five styles:
  (a) How are you today, Harry?
  (b) G'day, Harry!
  (c) Sweetie, turn the light out.
  (d) Doctor, I have a very sore throat.
  (e) If your worship pleases.
  (f) Do you have Calabrese salami?
  (g) Hello Mrs Johnson, terrible weather, isn't it?
  (h) Professor Chomsky is not only responsible for a revolution in linguistics, ...

**Answer:** The most probable classifications are: (a) casual; (b) casual/intimate; (c) intimate; (d) consultative/formal; (e) frozen; (f) consultative; (g) consultative; (h) formal. If your assessment differs, it should be within the range of only one style up or down.

---

**5.3.3** How do you think the so-called Royal *we* fits into the picture of address terms? (Supposedly, Queen Victoria used the first person plural instead of the first person singular.)

**Answer:** It is a form of impersonalization, which in Queen Victoria's case could be interpreted "I, the Queen, and my court" – not 'I' speaking as an individual woman, but 'we' speaking with the power of the Queen of the United Kingdom of Great Britain and Ireland and (after 1876) Empress of India.

---

**5.3.4** Not all *-ist* suffixes are dysphemistic, cf. *botanist, linguist, typist, violinist*. Also, there are many -IST dysphemisms not mentioned here. Discuss.

**Possible Answer:** *Anarchist, capitalist, communist, isolationist, marxist* are all used dysphemistically by people who disapprove (or pretend to disapprove) the actions of anarchists, etc. But they are not intrinsically dysphemistic: there are people proud to call themselves 'anarchists', 'marxists', etc. To call someone a *plagiarist* is always dysphemistic because plagiarism is theft of another's work (hence disrespectful to them).

---

**5.4.1** Almost every society has strong taboos against the mention of death. (a) Why do think this is so? (b) In what ways is this taboo manifest in English?

**Comment:** See Allan and Burridge 1991 Ch.6 for extensive discussion (and references).

---

**5.5.1** If the naturalist hypothesis were correct, would you know the meaning of Maasai *kiteng* or *abol*, Tzeltal *ćan* or *c'ihp* without the need for a dictionary?

**Possible Answer:** If naturalism were right, you would understand these words; but of course the form does not reveal their meanings. Maasai *kiteng* "cow", *abol* "hold a cow/bull by the

mouth", Tzeltal *ƚan* "sound emitted from a blow on a metal object", *c'ihp* "cries of ducks".

---

5.5.2 There is a wealth of evidence that where a language expression is ambiguous between a dysphemistic sense and a non-dysphemistic sense its meaning will often narrow to the dysphemistic sense alone.
(a) Look up the history of the meaning of *villain*.
(b) Check the history of English *hussy*, French *fille*, and German *Dirne*.
(c) Check the history of the English noun *accident*.
(d) Why did *coney* (rhymes with *honey*) get replaced by *rabbit* in the late 19th century?
(e) What is the most salient sense for you of the adjective *gay*? Would your grandparents say the same?

**Answer:** (a) *Villain* originally meant "low-born rustic", now an "evil doer". (b) All have been pejorized to "woman of ill-repute, prostitute"; originally *hussy* meant "housewife", French *fille* and German *Dirne* "girl". (c) *Accident* originally meant "chance event"; because an unfortunate event is said to happen by accident, the noun has been contaminated by misfortune and narrowed to an unfortunate chance event (except in *happy/lucky accident*). (d) Taboo term avoidance; the old meaning lives on in *cunnilingus*. The connotation was similar to that of synonymous *pussy* today. (e) −.

---

5.5.3 The words *meat, girl, disease,* and *ejaculation* have all been subject to semantic narrowing (not necessarily in consequence of taboo). Explain.

**Answer:** *Meat* originally meant "food", it narrowed to the best of food, namely flesh. *Girl* originally meant "child"; *child* originally meant "baby", but extended to its current meaning from the 11th century. In the 14th century *baby* took over "baby", and *boy* took over "boy" from earlier *knave*. *Girl* eventually took its current meaning in the 16th century. *Disease* originally meant "lack of

ease/comfort" and narrowed to its present meaning. *Ejaculation*: originally what volcanoes and geysers do: the hurling of rock, ash, lava, water, etc. by subterranean forces. Thence the sudden ejection of seed or semen from a plant or animal. And, figuratively, a sudden exclamation as in 'The other Bishops giving their assistance ... with very good ejaculations' (*O.E.D.*). The earliest sense has long been obsolete; and the figurative extension is rarely used today.

---

5.6.1  See if you can identify the kind of work done by people filling the following job descriptions:
(a) moving domestic engineer; (b) an intimate apparel field support manager; (c) urban transportation specialist; (d) member of the vertical transportation corps; (e) automative internist; (f) price integrity coordinator.

**Answer:** (a) removalist; (b) supervisor in the lingerie department of a department store; (c) bus-driver; (d) lift/elevator operator; (e) car mechanic; (f) check-out clerk.

---

5.6.2  During the Cold War (c.1945-90), reference would be made by members of the Western alliance to *the so-called democracies of the Eastern bloc*. Comment on the force of 'so-called' and 'bloc'.

**Possible Answer:** *So-called* has dysphemistic connotations because it indicates that Speaker does not endorse the accuracy of the label that others apply to the denotatum, and often in fact denies it. *Bloc(k)* has connotations of totalitarianism in contrast to the free-among-equals connotation of *alliance*.

---

5.6.3  Divide the following military terms between *us* and *them*.

| | |
|---|---|
| the leader is resolute | the leader is ruthless |
| press briefings, reporting guidelines | propaganda, censorship |
| Abu Nidal is a freedom fighter | Abu Nidal is a terrorist |

| | |
|---:|:---|
| kill, destroy | take out, neutralize, eliminate |
| cower in foxholes | dig in |
| first or pre-emptive strike | sneak or unprovoked attack |
| hordes | boys |
| brave, loyal dare-devils | mad, fanatical cannon-fodder |

**Answer:**

| **The US terms** | **the THEM terms** |
|---:|:---|
| the leader is resolute | the leader is ruthless |
| press briefings, reporting guidelines | propaganda, censorship |
| Abu Nidal is a freedom fighter | Abu Nidal is a terrorist |
| take out, neutralize, eliminate | kill, destroy |
| dig in | cower in foxholes |
| first or pre-emptive strike | sneak or unprovoked attack |
| boys | hordes |
| brave, loyal dare-devils | mad, fanatical cannon-fodder |

5.7.1 What have the following listemes got in common? *Booboo, byebye, choo-choo, dada, geegee, hush-hush, mama, night-night, tata, wee-wee.*

**Answer:** They are dissyllabic and formed by reduplication. They are colloquial, playful, and several are baby-talk (cf. Thun 1963).

5.7.2 The following are called ABLAUT-COMBINATIONS; they are mostly of the form $C_a\frown I\frown C_b\text{-}C_a\frown æ\frown C_b$, a few have /ɒ/ instead of /æ/: *dilly-dally, fiddle-faddle, mishmash, riffraff, ding-dong, flip-flop.* These are cases of quasi-reduplication (cf. Thun 1963). Can you think of any comparable words with a slightly different pattern?

**Possible Answer:** *Fuddy-duddy, fuzzy-wuzzy, hankypanky, helter-skelter, holus-bolus, lovey-dovey, namby-pamby, rolypoly, super-dooper* and the like are colloquial, they consist of two stressed rhyming disyllables with different initial consonants. Words such

as *hi-fi* and *sci-fi* are different: they consist of two end-clipped monosyllables.

---

5.7.3   The current meaning of the English noun *bead* was transferred from its former meaning "prayer". Explain.

**Answer:** In the Middle Ages the Pater Noster and Ave Maria were repeated many times over and a check was kept on the number of prayers by counting small balls strung on a rosary; hence the phrase *counting* or *telling one's beads*. Originally this denoted counting one's prayers, but the word *bead* came to refer to the pierced balls used in keeping tally and the sense "small pierced ball" was transferred to the form *bead* and replaced the sense "prayer".

---

5.7.4  We have seen that euphemisms are borrowed from other languages. There are two other motivations for borrowing: (a) Language $L_a$ will borrow from $L_b$ the name for something unfamiliar to speakers of $L_a$; (b) Language $L_a$ will borrow from $L_b$ because $L_b$ has more prestige (in some semantic field) than $L_a$. Can you think of any borrowings of these kinds?

**Possible Answer:** Place names and names of unfamiliar flora, fauna, and native institutions and artifacts are often taken into the language of colonizers. Medieval French was a source of English vocabulary in the semantic fields of government, administration, the army, the church, learning, medicine, art, fashion courtly manners, and food. Latin and Greek are sources for scientific naming. Italian was the source for many musical terms (*tempo, allegro*, etc.) because of Italy's prestige in this field. The current hegemony of the English language has led to many languages borrowing from it.

---

6.2.1   Explain why the inference from $p \wedge q$=T to $p$=T is valid; but the converse, the inference from $p$=T to $p \wedge q$=T, is invalid.

**Answer:** For the logical conjunction of $p \wedge q$ to be true it is necessary that both $p$ is true and $q$ is true. But from the fact that $p$ is true, we cannot be certain that $q$ is also true.

---

### 6.2.2 If $p$=T, why is $p \vee q$ a valid inference but not $p \veebar q$?

**Answer:** Because, given that $p$=T, $p \vee q$ is true whatever the value for $q$, but $p \veebar q$ is only true if $q$=F.

---

### 6.2.3 Suppose $p \wedge q$=T. Are the following true?
   (a) $p \vee q$             (b) $p \veebar q$

**Answer:** (a) Yes; (b) No

---

### 6.2.4 Show that the number of conjoined propositions can exceed two without changing the conditions on conjunction we have identified for the conjunction of just $p \wedge q$.

**Answer:** Replace $q$ by $(q \wedge r)$.

---

### 6.2.5 Suppose you have an exclusive disjunction of four propositions $(m \veebar n \veebar p \veebar q)$. How many would have to be false for the whole disjunction to be false, i.e. $(m \veebar n \veebar p \veebar q)$=F?

**Answer:** None, any two, or all four (but not only one, nor three). To show m$\veebar$n$\veebar$p$\veebar$q=F (it doesn't matter what order the truths and falsehoods occur). Let **m=T, n=T, p=T, q=T**: m$\veebar$n=F [because T$\veebar$T=F]; (m$\veebar$n)$\veebar$p=T [∵ F$\veebar$T=T]; (m$\veebar$n)$\veebar$p)$\veebar$q=F[∵ T$\veebar$T=F]: ∴ none gives the correct result. Let **m=T, n=T, p=T, q=F**: m$\veebar$n=F [because T$\veebar$T=F]; (m$\veebar$n)$\veebar$p=T [∵ F$\veebar$T=T]; (m$\veebar$n)$\veebar$p)$\veebar$q=T [∵ T$\veebar$F=T]: ∴ not just one. Let **m=T, n=F, p=F, q=F**: m$\veebar$n=T [∵ T$\veebar$F=T]; (m$\veebar$n)$\veebar$p=T [∵ T$\veebar$F=T]; (m$\veebar$n$\veebar$p)$\veebar$q=T [∵ T$\veebar$F=T]: ∴ not three. Let **m=T, n=T, p=F, q=F**: m$\veebar$n=F [∵ T$\veebar$T=F]; (m$\veebar$n)$\veebar$p=F [∵ F$\veebar$F=F];

(m∨n∨p)∨q=F [∵ F∨F=F]: ∴ two gives the correct result. Let **m=F, n=F, p=F, q=F**: m∨n=F [∵ F∨F=F]; (m∨n)∨p=F [∵ F∨F=F]; (m∨n∨p)∨q=F [∵ F∨F=F]: ∴ four also gives a correct result.

---

### 6.2.6 Why are the brackets needed to distinguish ¬(p∧q) from ¬p∧q?

**Answer:** To indicate the different scope of the negation.

---

### 6.2.7 If p∧q=F, is ¬(p∧q) valid?

**Answer:** Yes.

---

### 6.2.8 Confirm modus tollens by completing the following truth table.

| p | q | p→q | (p→q) ∧¬q | ((p→q) ∧¬q) →¬p |
|---|---|-----|-----------|-----------------|
| T | T |     |           |                 |
| T | F |     |           |                 |
| F | T |     |           |                 |
| F | F |     |           |                 |

**Answer:**

| p | q | p→q | (p→q) ∧ ¬q | ((p→q) ∧ ¬q) →¬p |
|---|---|-----|------------|------------------|
| T | T | T   | F          | T                |
| T | F | F   | F          | T                |
| F | T | T   | F          | T                |
| F | F | T   | T          | T                |

---

### 6.2.9 Complete the truth table below to demonstrate the biconditionality of p↔q.

| $p$ | $q$ | $p \to q$ | $q \to p$ | $(p \to q) \wedge (q \to p)$ | $p \longleftrightarrow q$ | $((p \to q) \wedge (q \to p)) \longleftrightarrow (p \longleftrightarrow q)$ |
|---|---|---|---|---|---|---|
| T | T | | | | | |
| T | F | | | | | |
| F | T | | | | | |
| F | F | | | | | |

**Answer:**

| $p$ | $q$ | $p \to q$ | $q \to p$ | $(p \to q) \wedge (q \to p)$ | $p \longleftrightarrow q$ | $((p \to q) \wedge (q \to p)) \longleftrightarrow (p \longleftrightarrow q)$ |
|---|---|---|---|---|---|---|
| T | T | T | T | T | T | T |
| T | F | F | T | F | F | T |
| F | T | T | F | F | F | T |
| F | F | T | T | T | T | T |

6.2.10  Using the following truth table, show whether $(p \veebar q) \to \neg(p \wedge q)$ is true.

| $p$ | $q$ | $p \veebar q$ | $\neg(p \wedge q)$ | $(p \veebar q) \to \neg(p \wedge q)$ |
|---|---|---|---|---|
| T | T | | | |
| T | F | | | |
| F | T | | | |
| F | F | | | |

**Answer:** $(p \veebar q) \to \neg(p \wedge q)$ is valid:

| $p$ | $q$ | $p \veebar q$ | $\neg(p \wedge q)$ | $(p \veebar q) \to \neg(p \wedge q)$ |
|---|---|---|---|---|
| T | T | F | F | F → F = **T** |
| T | F | T | T | T → T = **T** |
| F | T | T | T | T → T = **T** |
| F | F | F | T | F → T = **T** |

6.2.11  Using truth tables, show the truth of (a) and (b).

(a) $p \veebar q \leftrightarrow \neg(p \leftrightarrow q)$  (b) $\neg(p \leftrightarrow q) \rightarrow \neg(p \wedge q)$

**Answer:** (a)

| $p$ | $q$ | $p \veebar q$ | $p \leftrightarrow q$ | $\neg(p \leftrightarrow q)$ | $(p \veebar q) \leftrightarrow \neg(p \leftrightarrow q)$ |
|---|---|---|---|---|---|
| T | T | F | T | F | F $\leftrightarrow$ F = **T** |
| T | F | T | F | T | T $\leftrightarrow$ T = **T** |
| F | T | T | F | T | T $\leftrightarrow$ T = **T** |
| F | F | F | T | F | F $\leftrightarrow$ F = **T** |

Columns three and five (from left) are identical; column four could be omitted.

(b) The truth table is identical to that for 6.2.10 with $\neg(p \leftrightarrow q)$ substituted for $p \veebar q$.

---

6.2.12  It was said above that credibility matters more than absolute truth in ordinary language use. How can this be?

**Possible Answer:** The truth value of $p$ hinges on whether or not $p$ is, was or will be the case. Its credibility is what Hearer (or Speaker for that matter) believes with respect to the truth of $p$, or believes s/he knows, or does in fact know of it. A proposition like *I wouldn't lie to you* is evaluated for truth on the basis of what is known about the speaker. *China is a democracy* is evaluated against what one knows of China and believes is the meaning of *democracy*. Because most so-called 'facts' are propositions about phenomena as the latter are interpreted by whomever is speaking, we find that 'experts' differ as to facts about the economy or what should be done about narcotics; cf. Shapin 1994. Today, (a) below is taken to be false and (b) true; in the 13th century (a) was regarded as true and (b) as false.

(a) The Earth is roughly flat.
(b) The Earth is roughly spherical.

In the 13th century (a) was credible but (b) was not because there was no knowledge of the Earth's gravitational force that attracts things to it; there was, however, experience of things falling off spherical objects. Thus, whether ordinary language users judge a proposition true or false depends on how credible it is, and this is reflected in the way that they use and understand language.

---

6.3.1  Identify relations of entailment between the following:
   (a) Someone trapped an animal.
   (b) John is in town.
   (c) Today is very hot.
   (d) My brother trapped a rat.
   (e) Today is Monday and it is very hot.
   (f) Harriet knows that John is in town.
   (g) Tomorrow is Tuesday.

**Answer:** (d)$\Vdash$(a)      (e)$\Vdash$ (g)$\wedge$(c)      (f)$\Vdash$(b)

---

6.3.2  What is the conventional implicature of *another* (the positive counterpart to 'no other [cat]' in 22)?

**Answer:** *another* conventionally implicates that in $M^{w,t}$ there is already at least one N, distinct from this one.

---

6.3.3  Why CONVENTIONAL implicature?

**Answer:** Because a conventional implicature is part of the language system inferred from the sense of a language expression. Grice may have chosen the term to contrast it with conversational implicature, discussed in the next section, which is an inference from Speaker's USE of language rather than an inference determined by the semantic properties of the language itself.

---

6.3.4 Show that $(A \leftrightarrow \neg B) \leftrightarrow (\neg A \leftrightarrow B)$ but $A \rightarrow \neg B$ is not semantically equivalent to $\neg B \rightarrow A$. (See D6.6 and D6.5, respectively).

**Comment:** Create truth tables to demonstrate the point.

---

6.4.1 Comment on the following interchanges.

(a)                MADGE: So what's happening between you and Harry?

SUE QUICKLY LOOKS AT HER WATCH: Goodness! Is that the time? I must rush. Bye for now.

(b) JERRY: Wanna come to a movie tomorrow night?

     SHANA: I'm sorry, I have to wash my hair.

**Possible Answers:** (a) Sue makes no attempt to answer Madge's question, but instead beats a hasty retreat implicating some pressing engagement. The implicature is that Sue is unwilling to answer Madge's question (it is impossible to judge whether this is out of embarrassment, or because she thinks Madge is being nosey). (b) Jerry offers an invitation which Shana refuses, but despite the apology, the refusal is off-record: she does not explicitly refuse to go to the movie but tells of something she supposedly has to do instead. Contrast Shana's answer with a plain *No (I don't want to go)*. The implicature is a way of softening the affront to Jerry's face.

---

6.4.2 Explain how scalar implicature permits us to explain why it is that *or* is usually understood exclusively (i.e. as "or else" and not "and/or") in natural language. Use as a model sentence: *Sue is marking essays or watching Seinfeld*.

**Possible Answer:** The relevant implicative scale is *<and, or>* and the use of *or* from the lower end of the scale conversationally implicates that *and* doesn't apply. Notice that to clarify the issue we often use *and/or* for inclusive disjunction and *either...or* or *or else* for exclusive disjunction, e.g. *Sue is marking essays and/or*

*watching Seinfeld. Sue is either marking essays or else she is watching Seinfeld.*

---

6.4.3  Explain the implicatures in (a)-(b).
    (a) Gilbert wrote *The Mikado*
       ▷ Gilbert and no one else did so
    (b) I think that $p$ ▷ I don't KNOW that $p$

**Possible Answer:** Both are scalar implicatures and fall under the maxim of quantity (D1.23). E.g. if Gilbert was only one of two or more authors, this should have been stated. Similarly, if in fact I know that $p$ then I should say so; by saying only 'I think that $p$' I imply I cannot make the stronger statement – hence the implicature in (b).

---

6.4.4  What cooperative maxim is exploited in the memorandum quoted below, and what is Lynn and Jay's resulting implicature?

**Memorandum**

**To:**   *The Prime Minster*            *14 November*

**From:** *The Secretary of the Cabinet*  [Sir Humphrey Appleby]

*Certain informal discussions have taken place, involving a full and frank exchange of views, out of which there arose a series of proposals which on examination proved to indicate certain promising lines of enquiry which when pursued led to the realization that the alternative courses of action might in fact, in certain circumstances, be susceptible of discreet modification, in one way or another, leading to reappraisal of the original areas of difference and pointing the way to encouraging possibilities of significant compromise and co-operation which if bilaterally implemented with appropriate give and take on both sides could if the climate were right have a reasonable possibility at the end of the day of leading, rightly or wrongly, to a mutually satisfactory conclusion.*

I [the Prime Minister] stared at the sheet of paper, mesmerised. Finally, I looked up at Humphrey. 'Could you summarise this please?' I asked.

**Possible Answer:** Manner is the cooperative maxim exploited in the memorandum, and Lynn and Jay's resulting implicature is that readers should find the text amusing. They also reaffirm the point that government service jargon unnecessarily obfuscates (Ch.5).

---

6.4.5  Create a table showing the calculation of entailments and conversational implicatures for (a):
(a) Some of the students came, in fact all of them.

**Answer:** A table showing the calculation of entailments and conversational implicatures for
(a) Some of the students came, in fact all of them.
(b) Some of the students came.
(c) All of the students came.

| | | |
|---|---|---|
| (a) ⊨ (b) | By inspection | 1 |
| (a) ⊨ (c) | By inspection | 2 |
| (b) ▷ ¬(c) | Scalar implicature | 3 |
| ¬[(a) ▷ ¬(c)] | By 1, 3 and 2 | 4 |
| The implicature of (b), the first clause in (a), is cancelled by the second clause, (c). | | 5 |

---

6.4.6  In classical propositional logic if $p$ is valid then so is $p \lor q$. However in natural language, when given one proposition you cannot freely introduce another proposition and disjoin it from the first. Why is that?

**Answer:** In classical propositional logic it is legitimate to deduce from *Snow is white* that *Snow is white or the world's highest mountain is Everest*. Furthermore, if $p$=T and $q$=T then $p \land q$=T:

e.g. *Snow is white and the capital of Great Britain is London*. As these examples demonstrate, such rules are unnatural in ordinary language unless there is a coherent reason for connecting the two sentences. It is exactly this assumption of relevance in the connection that leads to the implicature being denied in *Harry and Sally came to the party together, though they are not an item*.

---

**6.4.7** Show that one of $A{\to}B$, $\neg A{\to}\neg B$, or $\neg(A\veebar B)$ is logically implied by both $A{\wedge}B$ and $\neg A{\wedge}\neg B$.

**Answer:** The table below is only a partial answer, though it should be clear that the claim will be validated.

| A | B | $(A{\wedge}B){\to}(A{\to}B)$ | $(\neg A{\wedge}\neg B){\to}(A{\to}B)$ | $(A{\wedge}B){\to}(\neg A{\to}\neg B)$ | $(\neg A{\wedge}\neg B){\to}\neg(A\veebar B)$ |
|---|---|---|---|---|---|
| T | T | $T{\to}T = T$ | $F{\to}T = T$ | $T{\to}T = T$ | $F{\to}T = T$ |
| T | F | $F{\to}F = T$ | $F{\to}F = T$ | $F{\to}T = T$ | $F{\to}F = T$ |
| F | T | $F{\to}T = T$ | $F{\to}T = T$ | $F{\to}F = T$ | $F{\to}F = T$ |
| F | F | $F{\to}T = T$ | $T{\to}T = T$ | $F{\to}T = T$ | $T{\to}T = T$ |

---

**6.4.8** Explain what each of the examples in 57-59 show. For example, 57 shows that Bill went upward and used his feet to do so.

**Answer:** *Bill climbed the mountain* invites the Quantity2 implicature that Bill used his feet to climb up it; it is improper to infer that he did it on his knees, that would need to be stated explicitly. *Bill climbed the mountain* implicates that he went up the mountain, which is cancelled in 58 by *Bill climbed **down** the mountain*. 59(a) is bad because valleys are inherently dips in the terrain (just as mountains are inherently mounds) and this conflicts with the Quantity2 implicature of *climb* "go upward". 59(c) implicates that Bill climbed up out of the valley (using his feet to do so).

---

Which implicatures hold for each of 72-75? (*Bill saw a movie. Bill looked straight at me, but he didn't see me. Bill saw a vision. *Bill saw a vision, but he didn't notice it.*)

**Answer:** In 72 both hold. In 73 the first; in 74 the second; in 75 neither.

---

6.5.1    Identify the presuppositions that distinguish the complement *Jay date Sally* in (a-e). You may represent the complement sentence by simply D.

(a) Jay dreamed that he dated Sally.
(b) Jay tried to date Sally.
(c) Jay managed to date Sally.
(d) Jay congratulated himself on dating Sally.
(e) Jay stopped dating Sally.

**Answer:** The presuppositions that distinguish the complement D (*John date Sally*) in (a-e):

(a) Jay dreamed that he dated Sally » D in the dreamworld $\wedge$ ¬D in the real world

(b) Jay tried to date Sally » John did something to enable D, but ¬D

(c) Jay managed to date Sally » John did something to enable D, and D

(d) Jay congratulated himself on dating Sally » D, which is a highly valued achievement

(e) Jay stopped dating Sally » Formerly D, now ¬D

---

6.5.2   The following sentences include some presuppositions within presuppositions, what are they?
(a) Mark was pleased that he'd bought the flowers.
(b) Mark wasn't sorry that he'd managed to seduce Sharon.

**Answer:**
(a) » ($a_1$) There is someone called Mark who bought something
($a_1$) » ($a_2$) There exist some flowers that Mark bought

(b) » (b$_1$) There is someone called Mark who had managed to seduce someone

(b$_1$) » (b$_2$) Mark did something to enable his success in seducing someone

(b$_2$) » (b$_3$) There is someone called Sharon

---

6.5.3 Demonstrate the rule (cf. Seuren 1985:278): *If A ⊮ B and B » C, then A » C*

**Possible Answer:** (a) *The cat is on the mat.* (b) *An animal is on the mat.* (c) *There exists some animal which is on the mat.* You can see that (a) ⊩ (b) and (b) » (c), ∴ (a) » (c)

---

6.5.4 What is entailed by *The car broke down before they got to Wagga Wagga*?

**Answer:** *The car broke down before they got to Wagga Wagga* ⊩ They were travelling to Wagga Wagga in a car but didn't get there because the car broke down.

---

6.5.5 Identify the conventional implicatures for the verbs
    (a) praise NP for Ving
    (b) apologize to NP for Ving
    (c) thank NP for X

**Answer:** (a) *praise NP for Ving* ▶ praiser believes Ving is a good thing for NP to have done. (b) *apologize to NP for Ving* ▶ apologiser accepts responsibility for some wrong inflicted on NP. (c) *thank NP for X* ▶ thanker believes X is advantageous to her/him and that NP is responsible for X.

---

7.2.1 Are (a-e) wff in $L_P$ (assume that $\Phi$ and $\Psi$ are wff)?
    (a) $\Psi \leftrightarrow \neg\Phi$;
    (b) $\neg\Psi \wedge \Phi$;
    (c) $\neg Pxy \wedge Qy$;

(d)  Pxyz → Qzy;
(e)  Px → Q

**Answer:** All except (e) are well-formed formulae.

---

7.2.2  Translate (a-d) into $L_P$.
    (a)  Yasmin is tall and Sally is short.
    (b)  Harry didn't kiss Yasmin.
    (c)  Harry is Yasmin's father.
    (d)  If Jack sold Harry the car, then Harry is lucky.

**Answer:** (a) Ty ∧ Ss; (b) ¬Khy; (c) Fhy; (d) Sjhc → Lh.

---

7.2.3  Give an idiomatic English translation for (a)-(c).
    (a)  Rh      (b)  Kbj      (c)  Gefp

**Answer:** Something along the lines of (a) Harry is rebellious, Harry is a rebel, Harry runs; (b) Barry kissed Jane, Barry is kinsman to Jane; (c) Ed gave Flora a petunia

---

7.2.4  (a)  Let B symbolize *buy* and S *sell*; how would you translate their relationship into $L_P$?
     (b)  Are *lend* and *borrow* symmetric predicates or converse predicates? Explain.

**Answer:** (a) Bxyz ↔ Szyx; (b) converse, Lxyz ↔ Bzyx.

---

7.2.5  Assuming that B is the predicate *be a bachelor* and H is the predicate *be happy*, why is the formula ∀x[Bx → Hx] true even if there are no bachelors?

**Answer:** ∀x[Bx → Hx] is false only when there is at least one bachelor who is not happy. Truth Table 6.2 shows that when ∀x[Bx]=F it does not matter whether ∀x[Hx] is T or F, ∀x[Bx→Hx]=T.

If ¬Lxy means "x dislikes y" and Jx means "x is a jerk"
    and Ry means "y is rich", translate into idiomatic English:
    (a) ∃x∀y[(Jx ∧ Ry) → ¬Lxy]
    (b) ∀x∀y[(Jx ∧ Ry) → ¬Lxy]
    (c) ∃x∀y[(Jx ∧ Rx ∧ Ry) → ¬Lxy]
    (d) ∀y[Ry → Jy]

**Answer:** (a) "for some x and for every y, if x is a jerk and y is
rich, then x dislikes y" or *There is at least one jerk who dislikes
all rich people*; (b) "for all x and all y, if x is a jerk and y is rich
then x dislikes y" or *Every jerk dislikes every rich person*; (c) "for
some x and for all y, if x is a rich jerk and y is rich then x dislikes
y" or *Some rich jerk dislikes all rich people (including him/
herself)*; (d) "for all y, if y is rich then y is a jerk" or *All rich
people are jerks*.

7.2.7  Show that
    (a) ∃x[Px ∧ ¬Lxj] ↔ ¬∀x[Px → Lxj]
    (b) ¬∃x[Px ∧ Lxj] ↔ ∀x[Px → ¬Lxj]

**Possible Answer:** We substitute constants a,b,c,d,f for variable
x in the formulae. Alternatively, imagine a world in which Anna,
Cath, Di, and the dog Fido like Jo, and Bell dislikes her. In (a-b),
Φ↔Ψ when both are true or both false.
(a): Scenario 1, in which both are true, has 3 people in it, Anna,
    Bell, and Jo:  Pa∧Laj =T, Pb∧¬Lbj=T.
    Scenario 2, in which both are false, has 3 people in it, Cath,
    Di, and Jo:  Pc∧Lcj=T, Pd∧Ldj=T.
(b): Scenario 3, in which both are true, has 3 individuals, Bell, Jo,
    and her dog, Fido:  Pb∧¬Lbj=T, ¬Pf∧Lfj=T.
    Scenario 4, in which both are false, has 3 people in it, Anna,
    Cath, and Jo:  Pa∧Laj=T, Pc∧Lcj=T.
    In scenario 2 in which ¬∀x[Px→Lxj] = F, it is also false that
    ∀x[Px→¬Lxj].

7.2.8  Construct a tree for ∃x∀y[(Jx ∧ Ry) → ¬Lxy]

**Answer:**

$$\Phi = \exists x \forall y[(Jx \wedge Ry) \rightarrow \neg Lxy]$$



(Tree diagram:)

- $\exists x$
- $\Phi = \forall y[(Jx \wedge Ry) \rightarrow \neg Lxy]$
  - $\forall y$
  - $\Phi = (Jx \wedge Ry) \rightarrow \neg Lxy$
    - $\Phi = Jx \wedge Ry$
      - $\Phi$
        - Pred — J
        - Term — x
      - C
        - $\wedge$
      - $\Phi$
        - Pred — R
        - Term — y
    - C
      - $\rightarrow$
    - $\Phi = \neg Lxy$
      - $\neg$
      - $\Phi$
        - Pred — L
        - Term — x
        - Term — y

---
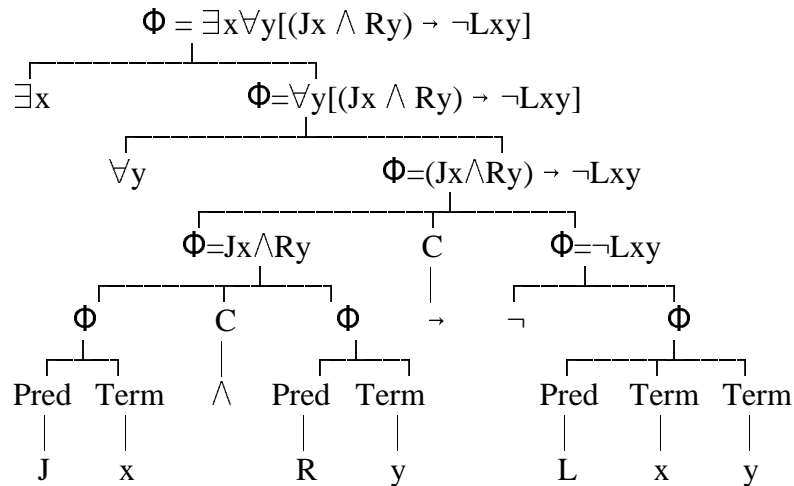
**7.3.1** Provide a colloquial English gloss for (a):
(a) $\forall x,y[(\textbf{kill}'(x,y) \rightarrow$
$\textbf{organism}'(y) \wedge \textbf{cause}'(x,(\textbf{become}'(\neg(\textbf{alive}'(y)))))]$

**Possible Answer:** "If for every x and every y, x kills y, then y is an organism and x causes y to become not-alive".

---

**7.3.2** Suggest meaning postulates (not necessarily exhaustive) for *bull, cow, calf, stallion, mare, foal, ram, ewe, lamb* that show the relationships between these listemes.

**Possible Answer** (to be revised in Ch.8).
$\forall x[\textbf{bull}'(x) \rightarrow \textbf{animal}'(x) \wedge \textbf{bovine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{male}'(x)]$
$\forall x[\textbf{cow}'(x) \rightarrow \textbf{animal}'(x) \wedge \textbf{bovine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{female}'(x)]$
$\forall x[\textbf{calf}'(x) \rightarrow \textbf{animal}'(x) \wedge \textbf{bovine}'(x) \wedge \textbf{young}'(x)]$
$\forall x[\textbf{stallion}'(x) \rightarrow \textbf{animal}'(x) \wedge \textbf{equine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{male}'(x)]$
$\forall x[\textbf{mare}'(x) \rightarrow \textbf{animal}'(x) \wedge \textbf{equine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{female}'(x)]$

$\forall x[\textbf{foal}'(x) \to \textbf{animal}'(x) \wedge \textbf{equine}'(x) \wedge \textbf{young}'(x)]$
$\forall x[\textbf{ram}'(x) \to \textbf{animal}'(x) \wedge \textbf{ovine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{male}'(x)]$
$\forall x[\textbf{ewe}'(x) \to \textbf{animal}'(x) \wedge \textbf{ovine}'(x) \wedge \textbf{adult}'(x) \wedge \textbf{female}'(x)]$
$\forall x[\textbf{lamb}'(x) \to \textbf{animal}'(x) \wedge \textbf{ovine}'(x) \wedge \textbf{young}'(x)]$

---

**7.4.1** An abstract definition of F={your-eye, the-Vatican, *b*, a-night-with-Brigitte-Bardot, $\sqrt{2}$} would be very problematic, even impossible. Why?

**Possible Answer:** Its membership is too diverse, there seems to be no common denominator. In natural language semantics this is rarely, if ever, the case.

---

**7.4.2** In the formula in (a), which letter is a constant and which a variable, and why?
   (a) $a \in$ {x:x is one of the first three letters of the English alphabet}

**Answer:** By convention *a* is a constant, and x a variable. Here '*a*' is the letter *a* and 'x' is either *a* or *b* or *c*. From the formula '$a \in$ {x:x is one of the first three letters of the English alphabet}' we understand that the constant *a* is one value (denotation) for the variable x, such that *a* is one of the first three letters of the English alphabet.

---

**7.4.3** What is the semantic difference between F⊂G and G⊆H?

**Answer:** F⊂G "F is a proper subset of G" (there are other subsets of G than F). G⊆H "is a subset of and/or equal to H"

---

**7.4.4** If G⊆H and G⊃H, then G=H. What is wrong with (a):
   (a) *If G⊂H and G⊃H, then G=H

**Answer:** If G is a proper subset of H, then G⊅H and G≠H, etc.

**7.4.5** (a) If you don't own a dog, what is the set of dogs belonging to you?
(b) Suggest a set relationship between the set of daffodils (D) and the set of flowers (F).

**Answer:** (a) ∅, the null or empty set { }; (b) D⊂F (*daffodil* is a hyponym of *flower*).

---

**7.4.6** Given that H={1,3,5} list all the eight subsets of H, identifying which are proper subsets.

**Answer:** {1,3,5}, { } ⊆ H.
{ }, {1}, {5}, {3}, {1,5}, {1,3}, {3,5} ⊂ H.

---

**7.4.7** If D={x:x is a daughter} and F={x:x is female}
(a) Is it true that D⊆F?
(b) Is it true that ∀x[Dx ↔ Fx]? If not, what truth functor should you substitute for ↔ ?

**Answer:** (a) Yes, though more appropriate would be D⊂F. (b) False because there are females who are not daughters:
∀x[Dx → Fx].

---

**7.4.8** What is the overlap set that validates the statement "Any two sets whatsoever overlap"?

**Answer:** ∅, the null or empty set { }

---

**7.4.9** List the members of H∪I where H={x:x is one of the first three positive odd numbers} and I={x:x is one of the last three letters of the English alphabet}.

**Answer:** H∪I = {1,3,5,x,y,z}

7.4.10　Where H={x:x is one of the first three positive odd numbers} and J={x:x is the square root of an odd number} what is H∩J? Is there any other relation you can identify between H and J?

**Answer:** H∩J = {1,3,5}. Yes, H⊂J

7.4.11　Can you suggest a set relation of any kind between the set of daffodils (D) and the set of airplanes (A).

**Answer:** (D⊄A) ∧ (A⊄D) but ∅ is a subset of both, and if we let O={x:x is a physical object}, then (D∪A) ⊂ O.

7.4.12　B is the set of natural numbers. A is the set of odd numbers. What is A′ with respect to B?

**Answer:** A′={x:x is an even number}

7.4.13　C={x:x is a human being}; D={x:x is a female creature}. E = C∩D.
(a) What is the abstract definition of E?
(b) What is the abstract definition of D′ with respect to C?

**Answer:** (a) E={x:x is a female human being}; (b) D′={x:x is a male human being}

7.4.14　Sets are sometimes depicted by Venn diagrams – usually circles or ovals, but one of them here is rectangular. Members are crowded within the set boundaries. In the diagrams below set F is represented by a RECTANGLE and set G by a CIRCLE. b∈F and c∈G, see Fig. i.

**Fig. i**  **Fig. ii**  **Fig. iii**

**Fig. iv**  **Fig. v**
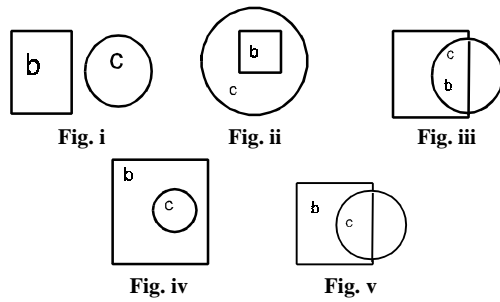
Which Figure(s) represent(s):
(a)     b ∈ F∩G                      (b)  c ∈ F∩G
(c)     F⊂G                          (d)  F⊃G
(e)  Identify F′ relative to G in Fig. i and Fig. iii.

**Answer:** (a) Fig. ii AND Fig. iii; (b) Fig. iii AND Fig. iv AND Fig.v; (c) Fig. ii; (d) Fig. iv; (e) In Fig. i, all of the members of G, the circle (G−F=G). In Fig. iii, all members of G in the area of the circle to the right and outside of the rectangle :



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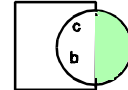
7.4.15  How would you represent:
     (a) Cats and everything with pink ribbons.
     (b) John has a pink ribbon.
     (c)  female bovine animals

**Answer:** Where C={x:x is a cat}, P={x:x has a pink ribbon}, F={x:x is female}, B={x:x is bovine}, A={x:x is an animal}: (a) C∪P; (b) John ∈ P; (c) F∩B∩A.

---

7.4.16  Do the digits in the written form of the number 120 form a triple? Explain your answer.

**Answer:** Yes. 1 = one hundred, 2 = two tens, 0 = no units.

---

7.4.17  In (a–c), which is correct, 1 or 2?
 (a)     1    M={x,y:x is married to y}
         2    M={<x,y>:x is married to y}
 (b)     1    M={x,y:x is near to y}
         2    M={<x,y>:x is near to y}

(c)  1  M={x,y:x is husband to y}
     2  M={<x,y>:x is husband to y}

**Answer:** (a) 1; (b) 1; (c) 2.

---

7.4.18 How would you explain a claim that the NPs in *the hunter killed the buffalo* form an ordered pair?

**Possible Answer:** It means something different from *the buffalo killed the hunter*, therefore the respective sequences are significant.

---

7.5.1 Where W={Jo, Sue, Ann}, L={x:x is lefthanded}, W∩L = {Jo}, T={0,1}: assign values from the range T mapped to the domain W by the function *is lefthanded*.

**Answer:** *is-lefthanded*    Jo → 1
                Sue ↘ 0
                Ann ↗

---

7.5.2  A={h,j,f};   B={j,f};   B={x:x is bald}.
    Which is INcorrect:  (a) B⊂A;     (b) B⊆A;     (c) B⊃A

**Answer:** (c) is incorrect, and (a) is more precise than (b).

---

7.5.3  There is a law of extensional substitutivity known as Leibniz's Law. It is given in two parts (i) and (ii) below. How would you gloss each of these?
     (i) (a=b) → (Φ↔[b/a]Φ)
     (ii) ∀x[Ax↔Bx] → (Φ↔[B/A]Φ)

**Answer:** (i) If a and b are terms, then a is extensionally identical to b if for any formula Φ containing a, b is substituted for a SALVA VERITATE, i.e. without changing the truth value of Φ. Example: *Cicero was a Roman orator ↔ Tully was a Roman*

*orator* ∴ *Cicero = Tully*. (ii) For every x, if A of x is logically equivalent to B of x, then predicate B can substitute for predicate A in formula $\Phi$ salva veritate. An example of equivalence between predicates often requires one to be simpler than the other, cf. **be_alive**$'$(x) $\longleftrightarrow$ ¬[**be_dead**$'$(x)]. ∴ *be alive = not be dead*. The intensions are, of course different.

---

### 7.5.4 Show that in model $M_1$, $\forall$x[**bald**$'$(x)]=0.

**Answer:**
$V^{M_1}\forall$x[**bald**$'$(x)]=0 iff, for some g, $V^{M_1,g}[\exists$x[**bald**$'$(x)]]=0.
$V^{M_1,g}[\exists$x[**bald**$'$(x)]]=0 iff, for at least one member d of domain A, $V^{M_1,g[d/x]}[\exists$x[**bald**$'$(x)]]=0. $V^{M_1,g[d/x]}[\exists$x[**bald**$'$(x)]]=1 iff, for some d∈A, [**bald**$'$(d)]=0.

Let $[\![$x$]\!]^{M_1,g}$=j
g = x→j
V[**bald**$'$(j)]=1 ∴ (a) is not validated on this assignment.

Let $[\![$x$]\!]^{M_1,g}$=f
g = x→f
V[**bald**$'$(f)]=1 ∴ (a) is not validated on this assignment.

Let $[\![$x$]\!]^{M_1,g}$=h
g = x→h
V[**bald**$'$(h)]=0 ∴ (a) IS VALIDATED on this assignment.

---

### 7.5.5 Let **loathe**$'$ be a Pred$_2$ such that **loathe**$'$(x,y) means "x loathes y" and this is distinct from **loathe**$'$(y,x). Consider an expansion of $M_1$ to $M_2$ which is exactly like $M_1$ but in addition Jack loathes Harry and Frank loathes Jack, i.e. in $M_2$, **loathe**$'$(j,h)=1 and **loathe**$'$(f,j)=1, **loathe**$'$(h,j)=0, **loathe**$'$(h,f)=0, **loathe**$'$(h,h)=0, **loathe**$'$(j,f)=0, **loathe**$'$(j,j)=0, **loathe**$'$(f,h)=0, **loathe**$'$(f,f)=0. Because, e.g. **loathe**$'$(h,j)=0 and **loathe**$'$(j,h)=1, it is clear that we must take account of the

fact that the arguments of the Pred$_2$ **loathe′** form an ordered pair. Generalizing, the interpretation function $[\![\textbf{loathe′}]\!]^{M_2}$ applies to pairs of entities in domain A to assign a value from the range {1,0}; the value is 1 when the first member of the pair loathes the second, and 0 otherwise.

(a) In the formula $[\![\textbf{loathe′}]\!]^{M_2}$={<j,h>, <f,j>} what is {<j,h>, <f,j>}?

(b) What is meant by: in M$_2$, **loathe′**(x,y)=1 ↔ <x,y>∈{<j,h>, <f,j>}?

**Answer:** (a) {<j,h>, <f,j>} identifies the extension of loathing in M$_2$. The set {<j,h>, <f,j>} is the set of pairs such that the first member of the pair loathes the second. (b) **loathe′**(x,y) is true in M$_2$ only if the pair <x,y> is a member of the set of pairs {<j,h>, <f,j>}.

---

7.5.6  Given M$_2$ as defined in 7.5.5, validate (a)

(a)      $V^{M_2,g}[\exists x\exists y[\textbf{loathe′}(x,y)]]$=1

Here's how to begin.

$V^{M_2}[\exists x\exists y[\textbf{loathe′}(x,y)]]$=1 iff, for some assignment g and {d,d′}⊆A, $[\textbf{loathe′}(d,d′)]$=1. Let the output of an assignment function g be as follows:

g =      x → h          i.e. $[\![x]\!]^{M_2,g}$= Harry
         y → j          i.e. $[\![y]\!]^{M_2,g}$= Jack
$V^{M_2}[\textbf{loathe′}](h,j)$=0   ∴ (a) is not validated

Next take assignment g which is a minimally different assignment of values to variables in M$_2$; thus, assume g(x)=g[h/x] as above, but g(y)=g[f/y].

**Answer:**   (a) $V^{M_2,g}[\exists x\exists y[\textbf{loathe′}(x,y)]]$=1
Suppose assignment g=<[h/x], [f/y]>:

g =      x → h          i.e. $[\![x]\!]^{M_2,g}$ = Harry
         y → f          i.e. $[\![y]\!]^{M_2,g}$ = Frank
V[**loathe′**(h,f)]=0  ∴ (a) is not validated

Suppose assignment g=<[j/x], [h/y]>:

g =      x → j          i.e. $[\![x]\!]^{M_2,g''}$ = Jack
         y → h          i.e. $[\![y]\!]^{M_2,g''}$ = Harry

V[**loathe′**(j,h)]=1  ∴ (a) IS VALIDATED

There is no need to proceed further. By showing that

    <g(x), g(y)> ∈ ⟦**loathe′**⟧ ∧ x≠y

we have demonstrated that $V^{M_2,g}[\exists x\exists y$**loathe′**$(x,y)]=1$.

---

### 7.6.1 Which of (a) and (b) is (i) well-formed and (ii) will yield a truth value?     (a) λx[Px]      (b) λx[Py]

**Answer:** (i) (a) is a wff; there is no x for lambda to bind in (b). (ii) Neither: (a) is a propositional function and (b) is ill-formed.

---

### 7.6.2 Using a λ-expression and λ-conversion translate the following and add glosses:
  (a) Sally runs and jumps.
  (b) Ed is a tall man.
  (c) Stuart jogs but is fat.

**Answer:** (a)  λx[Rx ∧ Jx](s) → ~~λx[~~Rs ∧ Js~~](s)~~ → Rs ∧ Js
     (b) λx[Tx ∧ Mx](e) → ~~λx[~~Te ∧ Me~~](e)~~ → Te ∧ Me
     (c) λx[$J_1$x ∧ Fx]($s_1$) → ~~λx[~~$J_1s_1$ ∧ $Fs_1$~~]($s_1$)~~ → $J_1s_1$ ∧ $Fs_1$

The subscripts used here to differentiate symbols for constants are not really necessary, because there is no need to be consistent between the different examples. Alternatively different symbols could have been chosen, e.g. (c) could read λx[Kx ∧ Fx](t) ... → Kt ∧ Ft.

---

### 7.6.3 Gloss all the following. Assume j=Jo, and that j, B, and S are constant throughout this exercise.
  (a) S={x:x is short}, B={x:x is brunette}
  (b) j ∈ S∩B
  (c) λx[Sx ∧ Bx](j)
  (d) λx[Sx ∧ Bx]

**Answer:** (a) S = the set of individuals which/who are short; B = the set of individuals which/who are brunette. (b) Jo is a member

of the overlap of S and B and/or Jo is a member of the set of individuals which is both short and brunette. (c) Same as (b). (d) The property of being both short and brunette, or the set of individuals who are both short and brunette, or S∩B.

---

7.6.4 Using a λ-expression and then λ-conversion, translate *Jo hated a tie that Ed wore*.

**Answer:** ∃x[λy[Ty ∧ Wey](x) ∧ Hjx]] → ∃x[Tx ∧ Wex ∧ Hjx]

---

7.6.5 Translate the following active‑passive pair using a λ-expression and then λ-conversion:
(a) Helen reviewed the book.
(b) The book was reviewed by Helen.

**Answer:** (a) λyλx[Rxy](b)(h) → λx[Rxb](h) → Rhb
λx[Rxb](h) means "h is member of the set of individuals which review the book".

(b) λxλy[Rxy](h)(b) → λy[Rhy](b) → Rhb
λy[Rhy](b) means "b is a member of the set of individuals that are reviewed by Helen".

---

7.6.6 Consider the following sentences in which k=Karen and m=Mona:
(a) λyλx[**think′**(x,**be_clever′**(y))](k)(k)
(b) λyλx[**think′**(x,**be_clever′**(y))](k)(m)
(c) λyλx[**think′**(x,**be_clever′**(y))](m)(k)
(d) λyλx[**think′**(x,**be_clever′**(y))](m)(m)
(e) *Karen thinks she's clever and Mona does too*.
Which of the following conjuncts of (a-d) gives an acceptable reading for the ambiguous (e)? Spell out the meanings for the others.
1. (a) ∧ (b)    2. (a) ∧ (c)    3. (a) ∧ (d)    4. (b) ∧ (c)
5. (b) ∧ (d)    6. (c) ∧ (d)

**Answer:** (a) Karen thinks Karen is clever, (b) Mona thinks Karen is clever, (c) Karen thinks Mona is clever, (d) Mona thinks Mona is clever. 1. Mona thinks Karen is clever, and Karen does too.  2. Karen thinks she is clever and that Mona is too. 3. Each of Karen and Mona thinks of herself as being clever. 4. Karen thinks Mona is clever and Mona thinks Karen is clever. 5. Mona thinks she is clever and that Karen is too. 6. Karen thinks Mona is clever and Mona does too. (e)→1∨3.

---

7.6.7   Where might you use the **λ**-operator to differentiate between (a) and (b)?
  (a) Someone drinks and someone smokes.
  (b) Harry drinks and smokes.

**Answer:** (a) $\exists x\exists y[Dx \wedge Sy]$.      (b) $\lambda x[Dx \wedge Sx](h)$.

---

7.6.8      Do    the    **λ**-conversions    on    the    expression
  $\lambda P\lambda Q\forall x[Px{\rightarrow}Qx](B)(H)$.

**Answer:**   $\lambda P\lambda Q\Phi$ is a translation for quantifiers (determiners) such as *every*. We can decompose $\lambda P\lambda Q\forall x[Px{\rightarrow}Qx](B)(H)$ as follows:

$\lambda P\lambda Q\forall x[Px{\rightarrow}Qx] = every$  (quantifier)
$\lambda P\lambda Q\forall x[Px{\rightarrow}Qx](B) = every\ bachelor$  (NP)
$\lambda P\lambda Q\forall x[Px{\rightarrow}Qx](B)(H) = every\ bachelor\ is\ happy$  (sentence)

$\lambda P\lambda Q\forall x[Px{\rightarrow}Qx](B)(H)$
  → $\lambda\cancel{P}\lambda Q\forall x[Bx{\rightarrow}Qx]\cancel{(B)}(H)$
    → $\lambda\cancel{Q}\forall x[Bx{\rightarrow}Hx]\cancel{(H)}$
      → $\forall x[Bx{\rightarrow}Hx]$

**8.2.1 What sort of script is invoked in the following?**

One morning Tom found his Jaguar wouldn't start. He phoned Ed and asked him to come and look at it. Ed didn't really want to, but he came anyway. He saw that the plugs were worn, and advised Tom to fit some new ones. Tom did so. After that the car worked perfectly.

**Possible Answer:** Tom invokes a what-to-do-when-your-car-won't-work-properly script: phone someone who knows about getting the car going again. In this story it is a friend, but for many people it will be a mechanic or motoring organization. Ed will invoke a mechanics-of-car-starting script for diagnosing the problem.

---

**8.2.2 Write a script for telephoning to make an appointment to see a doctor, dentist, or lawyer.**

**Comment:** Your script will contain components such as the following: looking up the correct phone number; greeting the receptionist; asking for an appointment; the receptionist may ask your reason for wanting a consultation; the receptionist will check an appointments book and offer a date and time; you may check your own diary before agreeing on a time; you may check the location for the consultation, in which case the receptionist will identify it; you may thank the receptionist and exchange farewells.

---

**8.2.3 Suppose that Bill is a plumber. Would you infer something different from (a) and (b)? Give reasons.**
(a) Bill went the restaurant.
(b) The plumber went to the restaurant

**Possible Answer:** Whereas (a) implicates that Bill went to the restaurant as a customer, (b) strongly implies that the plumber went to practise his (or her) trade.

---

Imagine a *car* frame. What would you guess to be the attributes of a car? What criteria do you use to establish the attributes of a car?

**Comment:** To establish the attributes of a car you think about criterial and typical features and functions of a car. The attributes of a car: it is a vehicle for personal transportation – typically of up to five people; it is of a certain marque and colour; it has a licence number; it has wheels; it has a chassis and body; there are usually windows all around the upper part of the car; the car is powered by an engine that has a number and that runs on fossil fuel; the engine drives the wheels via a system of gears in the transmission; the car is steered using a steering wheel; brakes are applied to the wheels to stop the car; the agent is a driver who sits in the front of the car; the driver looks at the way ahead through a windscreen; etc. The wheels have attributes: tyres and hubcaps; the engine has attributes: block, head, cylinders, pistons, valves, carburettor, plugs, etc. For the various attributes there are values (Barsalou 1992): wheels can be regular or mag, alloy or steel; etc. The number of cylinders and valves varies. The type of fuel varies: leaded or unleaded petrol, gasahol, diesel, lpg. Etc.

---

8.3.2 Do you think that frames can be invoked to explain the anomaly of (a-c)?
(a) The lamb miaowed.
(b) The lion chirruped.
(c) The cat bleated.

**Answer:** Yes. The senses of *lamb, lion, cat* will not identify the noise they make, but the semantic frames of *bleat, chirrup* and *roar* will identify that lambs bleat, birds chirrup, and lions roar; cats, of course, *miaow*.

---

8.3.3 What would be the semantic frame and strict subcategorization feature of the verb *wound*?

**Possible Answer:** This is, of course, the citation form of the verb and not the past tense form of the verb /waind/ (*wind*). The strict subcategorization can be represented in the manner of Fillmore and Atkins 1992:

$$[+ \underline{\quad} \text{NP} \left( \left\{ \begin{array}{l} \textit{with}\ \text{NP} \\ \textit{by}\ \text{Gerund} \end{array} \right\} \right)]$$

The semantic frame involves an animate actor who/which deliberately causes injury to a victim, some animate thing, using either a physical instrument that enters and often tears the victim's flesh, resulting in a wound; or, through words or deeds causes emotional grievance in the victim resulting in a psychological or emotional wound.

---

### 8.3.4 How do the semantic frames of *award, bequeath, donate* and *give* differ from one another?

**Possible Answer:** All of the verbs *award, bequeath, donate, give* have an effector-source, a recipient, and a theme which is an award, bequest, donation, or gift. *Give* is the least marked, hence the recipient can be given an award, bequest, or donation. There have to be very special circumstances for a bequest to be awarded, a donation bequeathed, or an award donated. The theme is awarded to the recipient as a prize or reward for some particular achievement; the effector is typically an institution or represents an institution. The effector bequeaths a bequest after their own death. A donor acts in a worthy manner when making a donation, and the recipient is typically an institution or someone not personally known to the donor.

---

### 8.3.5 Chomsky 1957 created a sentence that was supposed to be syntactically acceptable but semantically anomalous, it was *Colourless green ideas sleep furiously*. Can you think of any context that will make this sensical?

**Comment:** In 1971 Yuen Ren Chao contextualized Chomsky's *Colourless green ideas sleep furiously* in such a way as to render it sensical:

**The Story of my Friend, Whose Colorless Green Ideas Sleep Furiously**

> I have a friend who is always full of ideas, good ideas and bad ideas, fine ideas and crude ideas, old ideas and new ideas. Before putting his new ideas into practice, he usually sleeps over them to let them mature and ripen. However, when he is in a hurry, he sometimes puts his ideas into practice before they are quite ripe, in other words, while they are still green. Some of his green ideas are quite lively and colorful, but not always, some being quite plain and colorless. When he remembers that some of his colorless ideas are still too green to use, he will sleep over them, or let them sleep, as he puts it. But some of those ideas may be mutually conflicting and contradictory, and when they sleep together in the same night they get into furious fights and turn the sleep into a nightmare. Thus my friend often complains that his colorless green ideas sleep furiously.

<div align="right">

(http://weber.u.washington.edu/~yuenren/ChaoBiography.html
Accessed 1997)

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8.4.1  The differential value of *rabbit* or *lamb* differs from that of *sheep* or *pig* because of the existence of the lexemes *mutton* and *pork*. Explain.

**Possible Answer:** Whereas *lamb* and *rabbit* denote both the animal and its meat, *sheep* denotes the animal whose meat is *mutton*. Similarly *pig* denotes the animal and *pork* its meat.

---

8.4.2  (a) What do the morphemes in *hyponym* contribute to its meaning? (b) What words other than *hyponym* can you think of with the prefix *hypo-*? (c) What is the difference in meaning between *hypo-* and *hyper-*?

**Answer:** (a) The prefix *hypo-* is the (ancient) Greek counterpart to Latin *sub-* "under"; the suffix *-nym* as in *synonym, antonym* derives from Greek *ónoma* "name". So the etymology of *hyponym* gives "subordinate name".

(b) *hypodermic* "under-skin"; *hypotaxis* "under-structures" ⇒ "with subordinate structures"; *hypotenuse* "under-line" ⇒ "the line stretching under a right-angle in the right-angled triangle"; *hypothesis* "under-thesis, supposition" ⇒ "basis for argument". There are also many uncommon listemes and others like *hypochondria* and *hypocrite* whose etymology is completely obscure in their current meanings.

(c) *hyper-* is the opposite of *hypo-* as can be seen from the fact that its Latin counterpart is *super-* "over, above".

---

8.4.3 Identify the kinds of semantic relations that hold between (pairs of) items in the following list: (a) *brother of,* (b) *child of,* (c) *female parent of,* (d) *male sibling of,* (e) *mother of,* (f) *parent of,* (g) *sibling of,* (h) *consanguineal kin.*

**Answer:** (a) is synonymous with (d): *X is the brother of Y ↔ X is the male sibling of Y.* (b) is the converse of (f): *X is the child of Y ↔ Y is the parent of X.* (c) is synonymous with (e): *X is the female parent of Y ↔ X is the mother of Y.* (d,e,f) have been accounted for. (g) is superordinate to (d), and therefore to (a); furthermore, *X is brother to Y → Y is sibling to X* (and Y can be either male or female). (h) Provided there are no step-relations, adoptions, or fosterings, all of (a)-(g) are hyponyms of (h).

---

8.4.4 Translate (a) into colloquial English.
   (a) ∀x[**be_a_bachelor′**(x) ↔ **λ**y[**be_a_man′**(y) ∧
          **never_married′**(y)](x)]
   (b) Give a couple of English sentences exemplifying (a) and show the entailment relations between them.

**Possible Answer:** (a) For every x, x is a bachelor if, and only if, x is a member of the overlap of things that are men and things

that have never married. (b) E.g. *Tom is a bachelor* ‖ ╟ *Tom has never married*.

---

### 8.4.5  To *cut one's hand* usually implies a cut not of a finger, but elsewhere on the hand. Why should this be?

**Possible Answer:** Because the finger is only a part of the hand, if one is cut on the finger, why not say so and observe the maxim of quantity (D1.23). But Speaker's choice will depend on how much detail is judged relevant to the particular context in which the phrase is used.

---

### 8.4.6  Can you make any sense of *He was born with hands but no arms*?

**Possible Answer:** I can only imagine this in the case where a birth defect led to the wrists being apparently joined directing to the shoulder. Note that the criterion is not a matter of language, but of what is denoted.

---

### 8.4.7  The is-part-of relation is manifest differently in *a minute is part of an hour, which is part of a day*, etc. Although a body can exist without an arm, an hour necessarily contains minutes; moreover a mutant body could have three arms, but an hour consists of exactly sixty minutes. Or does it?

**Answer:**  Although an hour is strictly speaking exactly 60 minutes, the term is often used (like the others listed here) in a very flexible way. Someone can be hyperbolic and say *I've been waiting an hour* if they feel they have been waiting a long time; or they can understate to pretend they have not been inconvenienced too greatly. In these cases they are not held to be lying. See the discussion of *lie* in Ch.10.

---

**8.4.8** *Kick* is related to *hoof* and *foot*. And *foot* is related to *ankle, leg, body* and *toe*, and to *boot, shoe, sock, stocking*. Is *kick* also related to *stocking*?

**Possible Answer:** It is usual for semantic fields to contain only one lexical class (e.g. all nouns, all verbs), but there is no obvious justification for this. Given that the semantics of both *kick* and *stocking* must refer to *foot*, it is arguable that *kick* is in the same semantic field as *stocking*, but not in the same semantic frame.

---

**8.4.9** *Start, begin, commence, set out* are all related to *continue, keep on, go on*, and to *finish, end, terminate*. As soon as we begin to define the relationships between listemes, we also begin to define a semantic field. What else can you say about this one?

**Possible Answer:** These three sets of verbs identify different aspects in the development of an event: initial, ongoing, and terminal. There are notable differences between durative events such as working and punctual events such as hitting; compare *work, start working, keep on working, finish working* with *hit, start hitting, keep on hitting, finish hitting*. Cf. Chs 11-12, Comrie 1976, Freed 1979, Dahl 1985, Thelin 1990, Bybee, Perkins, and Pagliuca 1994.

---

**8.4.10** Why is there no anomaly in *Her lovely blue eyes were red from crying*? (How can her eyes be red if they are blue?)

**Possible Answer:** *Blue eyes* refers to the colour of the irises, which is permanent throughout a person's life; *red eyes* refers to the bloodshot whites of the eyes, which is (for most people) a temporary state. We rely on the *eye* frame to correctly understand this sentence.

---

### 8.5.1 Attempt a componential analysis of *biscuit, bread, cake, roll, scone*.

**Possible Answer:** Lehrer 1974:65 suggests the following:

| *biscuit* | ±sweet | –raised | –yeast | –soft | +individual |
|---|---|---|---|---|---|
| *bread* | –sweet | +raised | +yeast | +soft | –individual |
| *cake* | +sweet | +raised | –yeast | +soft | ±individual |
| *roll* | –sweet | +raised | +yeast | +soft | +individual |
| *scone* | ±sweet | +raised | –yeast | +soft | +individual |

These features differentiate the five nouns but don't recognize that all are foods and all normally contain flour of some kind. They are therefore not exhaustive. They identify a number of parameters relevant to food: taste (±sweet), shape (±raised), content (±yeast), and consistency (±soft), but you may have identified others. To present Lehrer's semantic components in the form favoured here, *bread*, for instance, could be analyzed as follows:

$$\forall x[\textbf{bread}'(x) \rightarrow \boldsymbol{\lambda} y[\textbf{food}'(y) \land \neg\textbf{sweet}'(y) \land \textbf{raised}'(y) \land \textbf{soft}'(y) \land \neg\textbf{individual}'(y) \land \exists z[\textbf{contains}'(y,z) \land \textbf{yeast}'(z)]](x)]$$

This omits most of the contents of bread, it ignores the fact that bread can be unleavened, and the fact that yeast causes bread to be raised. The fact that bread is created from moistening flour or meal is something it shares with all the other foods listed, but the fact that it is kneaded is shared with *roll* but none of the others. There is a problem of how much of this information is encyclopedic rather than purely lexical. We might want to refer to the fact that bread is a staple food which is presumably what allows its semantic extension to the slang senses connected with money.

---

### 8.5.2 In reality sex differentiation is more complicated than as presented here. Although there are natural occurrences of

hermaphrodites among higher animals, they are abnormal; however, there are many species of living organisms which are normally hermaphrodites. There are also quite a number which undergo sex changes as part of their normal life-span. Thus the antonymy which we intuit for the listemes *male $\vee$ female* is by no means so straightforward in its application; even though for most speakers the more complex combinations of sex alternations may never arise as a topic of conversation. What should the semanticist make of these complications?

**Answer:** The semanticist should ignore it except as it becomes a linguistic issue. Whatever a particular group of language users take to be the norm is the norm for semantics in their language/ dialect/jargon.

---

8.6.1 Try writing semantic definitions using NSM for
  (a) *X is red*
  (b) Either *sky* or *water*.

**Answer:** *red* – color thought of as the color of blood (Wierzbicka 1980:43).

> *X is red*
> when one sees things like X one can think of fire
> when one sees things like X one can think of blood
> (Wierzbicka 1990b:127)
> *sky*
> one can see it at all kinds of times
> everything is under it (Wierzbicka 1990b:146)
>
> *water*
> one can see it in some places
> not because people did something in these places
> it can move
> at some times one can see it everywhere
> because something happens in the sky

one can think: I want it to be in my mouth
one can do something because of this

<div align="right">(Wierzbicka 1990b:146)</div>

---

### 9.2.1  What is the relationship between these measurements and body parts: *inch*, *hand*, *foot*, *yard*, *fathom*, *mile*.

**Comment:** Look them up in a good dictionary.

---

### 9.2.2  (a) Why do you think *the back of the hand* and *the back of the arm* are on opposite sides of the same limb?
### (b) Where is the back of a book in relation to its front?

**Possible Answer:** (a) The back of the hand is defined by being opposite the 'interactive side' from which the fingers extend when bent. Furthermore, when the arms hang by the sides of the body, the back of the hand is typically in line with the front of the body. The back of the arm is part of the peripheral back; also bending the arm at the elbow or shoulder moves the arm in the opposite direction from the back of the arm.  (b) Opinions may differ, but *the back of a book* is ambiguous between the spine of the book and the back-cover, which is opposite the front – where you start reading from.

---

### 9.2.3  By which criteria do we assign backs to the following:
### (a) a frisbee   (b) a curtain   (c) a sea-urchin
### (d) a leaf   (e) a picture-postcard

**Possible Answer:** (a) If stationary it is defined by $C'_N$; if flying through the air, then by $L'_N$. (b) Opinions differ, but most people have the back facing the window; this would be determined by $I'_N$ – what you look at from inside the room is the front of the curtain; the lining is towards the window, at the back of the curtain. (c) $I'_A$ defines the back as where the spines are, opposite its 'interactive-side'. (d) We usually talk about the underside of

a leaf rather than the back and this may be because the criteria for assigning a front and back do not directly apply. Your guess is as good as mine. (e) A picture post-card is an interesting case: the front is defined like any other picture as the side you look at. This over-rides the fact that you interact with the back of the card when you write or read it.

---

9.2.4   Imagine a house with a garden/yard in front of it and another garden/yard behind it. Where is the back of each of these gardens/yards? Why?

**Possible Answer:** The back is the part farthest from the house in both cases (though some speakers have doubts about where the back of the front garden is, because it is not customary to use the phrase). It seems that a garden/yard is oriented to the house much like a stage to an audience. We confront it.

---

9.3.1  Looking at Figs 9.5-6, how might you add to the formula: $\exists x[\textbf{colour\_chip}'(x) \wedge (\textbf{ćah}'(x) \, ...)]$?

**Possible Answer:**
  $\exists x[\textbf{colour\_chip}'(x) \wedge (\textbf{ćah}'(x) \vee \textbf{k'an}'(x))]$.
There is some (colour chip) x which is red and/or yellow.

---

9.4.2   Here is a list of classified items for just three of 13 classifiers in a language. Identify a possible basis for classification for each classifier.

(I) pencil, pen, hunting knife, folding (or pocket) knife, crowbar, wood rasp, metal file, one and two-handled wood saws, length of iron pipe, cigar, cigarette, match, fork, spoon, rake, shovel, hoe, pickaxe, axe, hatchet, car key, rifle, shotgun, metal or wooden ruler, carpenter's T-square, carpenter's level, metal bolt, nail, screw, wire brad, baseball bat, flashlight, flashlight battery, hammer,

> wrench, piece of firewood, cradleboard, clothespin/peg, arrow shaft, bow, fence post, blade of grass, log.
>
> (II) pail, washbasin, drinking glass, coffee cup, frying pan, kerosene can, tin can (all sizes), shoe, boot, spool of thread, spool of wire, cake of soap, loaf of bread, box of detergent soap, box of matches, pack of cigarettes/cigars/ chewing tobacco, car/truck tyre, chair, table, light bulb, kerosene lantern, brick, book, egg, apple, peach, pear, potato, acorn, walnut, peanut, coins, cigarette lighter, beer/wine bottle, milk container, burden basket, flat basket, wallet, Dutch oven, coffee pot, revolver, pocket watch, shoebox, saddle, cooking tin, kernel of corn, grain of salt, oil/gasoline drum, bale of hay, pebble.
>
> (III) piece of paper, paper money, blanket, horse blanket, saddle pad, pillow case, sleeping bag, buckskin, trousers, T-shirt, shirt, tortilla, paper sack, burlap (feed) sack, sock, towel, piece of canvas, brassiere, woman's slip, woman's dress, diaper/nappy, sweater, pillow.

**Answer:** (I) Saliently one-dimensional and rigid (stick-like).
(II) saliently three-dimensional (round).
(III) saliently two-dimensional and flexible (blanket-like).
(Data from Basso 1968).

---

10.2.1 (a–e) contain falsehoods that don't count as reprehensible lies. Explain why.
- (a) My boss is a real pig.
- (b) It's so hot out there you could fry an egg on the sidewalk!
- (c) I had a great time at your party on Saturday. [Speaker was in fact bored.]
- (d) HE: What have you got me for my birthday then?
  SHE: Nothing. [She has in fact bought a present.]
- (e) Your girlfriend bought you that lovely tie? Ditch her. ['lovely'?]

**Answer:** (a) is a dysphemistic hyperbole (Ch.5). (b) is a vivid hyperbole focusing on the excessive degree of heat. (c) is a social

lie; it is important to pay attention to one's interlocutor's positive face, and compliment them when they have supposedly done you a favour by inviting you to their party. (d) is a white lie: presents are supposed to surprise the recipient. (e) Sarcasm and irony trade on blatant falsehood in which Speaker intentionally says something that s/he knows that Hearer must know that Speaker knows is false.

---

**10.2.2**  A tomato is said to be 68% vegetable and 14% fruit. Why don't these percentages add up to 100%?

**Answer:** These figures indicate the percentage of the population that placed *tomato* in one or the other category; some people may not have included it in either one. The percentage corresponds to grades of fuzzy set membership; the prototypical member of the set Vegetable (carrot in this case) would score close to 100% if nearly everyone listed it in that category.

---

**10.2.3**  Kay and McDaniel 1978 argue that the boundaries of colour categories are defined by the foci of adjacent colours. The area between the boundary foci is a fuzzy set, where the colour focus has the value 1. E.g. a yellow green with a wavelength of 520 nm is 0.67 green and 0.33 yellow (and 0 red, 0 blue). Overlaps like pink and orange (**red**$'$∩**yellow**$'$) have a focus at 0.5, which is a problem. Kay and McDaniel simply double every overlap membership number to counteract it. Is this justifiable?

**Answer:** It is not.

---

**10.2.4**  (With apologies to Pulman 1983:113), rank the following verbs on a scale from 1, best exemplar to 7, worst exemplar:
(i)    Category = Kill. Verbs to rank: (a) *assassinate*; (b) *commit suicide*; (c) *execute*; (d) *massacre*; (e) *murder*; (f) *sacrifice*.

(ii)    Category = Speak. Verbs to rank: (a) *drone*; (b) *mumble*; (c) *recite*; (d) *shout*; (e) *stutter*; (f) *whisper*.

(iii)   Category = Walk. Verbs to rank: (a) *limp*; (b) *march*; (c) *pace*; (d) *saunter*; (e) *stride*; (f) *stumble*

**Answer:** Pulman's scores were **(i):** (e) 1.1, (a) 2.05, (c) 2.82, (d) 3.28, (f) 5.22, (b) 5.33. **(ii):** (c) 2.57, (b) 3.46, (d) 3.51, (f) 3.64, (a) 3.98, (e) 5.35. **(iii):** (e) 1.86, (c) 2.05, (d) 2.41, (b) 3.01, (f) 5.31, (a) 5.37. According to Pulman 'What people are doing [...] when making judgements about the typicality of a member of a verb category, is computing the amount of semantic modification need to get from the category name to the member' (1983:131f).

---

10.2.5  Rank the following in terms of the category levels quoted from Lakoff: (a) *African elephant*, (b) *animal*, (c) *elephant*, (d) *mammal*, (e) *pachyderm*.

**Answer:** (a) species, (b) unique beginner, (c) genus, (d) life form, (e) intermediate.

---

10.2.6  Tversky 1990:336 writes 'It's innocent to offer you a ride home in my "car" but not to offer you a ride in my "Ferrari" or my "vehicle".' What is she talking about here?

**Answer:** Tversky talks of using the basic (genus) level category *car* as a norm in preference to 'species' (*Ferrari*) or 'life form' level (*vehicle*).

---

10.2.9  If Jake is taller than Slim and stands up against Slim, is it true that *Jake stands over Slim*? Would this be connected in any way with *a standover*?

**Answer:** There are negative connotations to *Jake stands over Slim* that are not found in *Jake stands taller than Slim* or even *Jake stands above Slim*; the phrasal verb *stand over* implies

power over or threat to L. Presumably this arises from the assumption that if X is taller or bigger than Y, X can often overpower Y. So, it certainly could be connected with *a standover*.

---

10.2.10  Identify T (trajector) and L (landmark) in (a-d).
   (a)  Sally poured water over the petunias.
   (b)  A rope was thrown over the camel's back.
   (c)  The boat sailed beneath the bridge.
   (d)  Sam put the lamp on the table.

**Answer:** (a) Sally poured water$_T$ over the petunias$_L$.
(b) A rope$_T$ was thrown over the camel's back$_L$.
(c) The boat$_T$ sailed beneath the bridge$_L$.
(d) Sam put the lamp$_T$ on the table$_L$.

---

10.2.11   Explain why a tank can be *overfull* but there is something odd about describing a tank as *overempty*.

**Answer:** Although something can be filled beyond its capacity, it cannot be emptied beyond its capacity. Nonetheless, I suspect that the verb *overempty* might be used by analogy with verb *overfill* under some circumstances.

---

10.5.2  Suppose your intended reference consists of the pair of diagrams in Fig.10.7. What is the $[\![r]\!]$ and $[\![e]\!]$ for this task?

**Answer**: The reference will be to the two sketches, (a) and (b). If, say, you were to refer to sketch (a) as a *rabbit*, then $[\![r_a]\!]$ = sketch (a) and $[\![e_a]\!]$ = $[\![rabbit]\!]$. Similarly, $[\![r_b]\!]$ = sketch (b) and $[\![e_b]\!]$ = $[\![cow]\!]$.

---

10.5.4  How is it possible for you to interpret *blue tomato*?

**Answer:** By analogy with, say *blue ball*, $\lambda$x[**blue$'$**(y) $\wedge$ **ball$'$**(y)](x), or *green tomato* $\lambda$z[**green$'$**(y) $\wedge$ **tomato$'$**(y)](z). Hence, *blue tomato* is $\lambda$y[**blue$'$**(x) $\wedge$ **tomato$'$**(x)](y). Not all collocations work out so neatly as this one, however.

---

11.2.1 What are the moods of (a–e) and which have truth values?
    (a) Congratulations!
    (b) You will do your homework!
    (c) If I were to apply, would they lend me $100,000?
    (d) I'm asking you what your name is.
    (e) Your name is ... ?

**Answer:**

(a) Expressive. No truth value.

(b) Problematic. It has declarative syntax and a truth value, albeit in the future. However, the punctuation/prosody and meaning clearly indicate an imperious entreatment. Nonetheless, if we are to distinguish (b) from the imperative *Do your homework!*, which has the same illocutionary point, it must be because the mood is different.

(c) The first clause is subjunctive, the second is an interrogative subjunctive. The first clause would have a truth value in some hypothetical world accessible from the world spoken in. Being interrogative, the second clause has no truth value.

(d) Declarative, with a truth value.

(e) Although syntactically declarative, (e) is incomplete, has no truth value and its punctuation/prosody indicate an interrogative. To complete (e) the '...' would have to be lexicalized to *what*. Despite the word order, *Your name is what?* Lacks a truth value in exactly the same way as *What is your name?* does. The punctuation/prosody appears to be inescapable. This is not the case for the imperative-like (b) from which it is possible to remove the imperative-type punctuation/prosody and have a straightforward predictive declarative *You will do your*

*homework.* I therefore conclude that the mood of (e) is interrogative.

---

11.2.2   What is modified by the italicized adverbial (note its location) in each of (a-c)?
    (a) *Once and for all*, go to bed you wretched child.
    (b) *Frankly*, I don't believe you.
    (c) *Seriously*, do you have to return to Moscow tonight?

**Answer:** In all (a-c) it is the primary illocution. In (a) the imperative is issued once and for all by Speaker, cf. *I tell you once and for all, go to bed*. In (b) the statement is made frankly by Speaker, cf. *Putting it frankly, I don't believe you*. Being interrogative, (c) is ambiguous between "I'm being serious when I ask you, ..." and "Be serious when answering the question ...". The second of these is only applicable to questions (requests seeking a verbal response) and not to other kinds of requests, cf. *Seriously, can you pass the salt?*

---

11.3.1   We talk of the past being behind us, the future in front of us; we stride forward facing the unknown. There are languages (e.g. Trique, Maori, Ancient Greek, cf. Hollenbach 1990, Thornton 1987:70) where one faces the past. How can this be?

**Answer:** We can't see/know what is behind us, only what is front of our eyes. We have seen what is in the past and (in some sense) know about it. Thus it is like the scene in front of our eyes. The future is unknown; thus it is like what is behind us.

---

11.3.2   The difference between punctual and durative verbs is a difference of lexical aspect (Ch.12). Briefly explain what you understand by the terms.

**Answer:** Typically, a punctual event is momentary, whereas a durative event occupies a noticeable stretch of time. For instance the verb *glimpse* "catch sight of" is punctual, whereas *watch* is durative.

---

11.3.3 How would you represent the semantics of time in (a-d)? E.g. for *She shot the dentist* it would be **P**[*she shoot the dentist*]
    (a)    She saw a skin specialist.
    (b)    She's seen a skin specialist.
    (c)    She's not been seeing a skin specialist.
    (d)    Fred cried when Toni came in.

**Answer:** (a) **P**[*she see a skin specialist*].
(b) **N**[**P**[*she see a skin specialist*]].
(c) ¬[**N**[**P**[START[*she see a skin specialist*]] ∧
    ¬FINISH[*she see a skin specialist*]].
(d) **P**[*Fred cry* ≽ *Toni come in*]   or perhaps
    **P**[START[*Fred cry*] ≽ FINISH[*Toni come in*]]

---

11.4.1 Modal verbs split between realis and irrealis. Which category do the following fall into?
    (a) Although he's only three, Sean *can* swim.
    (b) I think I *might* go swimming.
    (c) She *must* get her application posted before noon today.
    (d) *Would* you come to the ball with me?

**Answers:** (a) realis  (b) irrealis  (c) irrealis  (d) irrealis.

---

11.4.6 What part does the word *can* play in the illocutionary point of each of (a–c)?
    (a)    Come early and we can have a drink.
    (b)    Can you pass the salt?
    (c)    Jeez, that woman can talk!

**Possible answers:**

(a) Your coming early makes it possible that we have a drink (epistemic). An invitation to enable conviviality (presumably Speaker provides the first drink!). Note the onus is on Hearer.

(b) **?**[◇[you pass the salt]] ▷ **?**[**will′**(*you*,[**do′**(*you pass the salt*)])] Asking about Hearer's ability to do something often implicates asking Hearer's willingness to do it.

(c) **can′**(*that woman*, [**do′**(that woman, talk)]) ▷ that woman talks more than most. Predicated of a normal person, *talk* is pejorative in (c); so are other verbs referring to activities that can be done to excess, e.g. *eat, drink*. Many other verbs are not pejorative, cf. *That woman can sing / run!* It depends on context whether *That woman can act* is laudatory or pejorative.

---

11.4.8 Idiomatic expressions like in (a-c) are ambiguous between epistemic ability and deontic meanings because their main function is to act as expressives. What is the implied meaning for each of them?
  (a)    You can leave me off that list!
  (b)    Fred can get stuffed!
  (c)    You can say that again!

**Possible answers:** In none of (a-c) does Speaker have direct authority over actor.
(a) ◇[you leave my name off the list] ∧ PERMITTED[you leave my name off the list. Both entail the demand [you leave my name off the list].
(b) means something like ◇[Fred get stuffed] ∧ PERMITTED[Fred get stuffed]. Both entail the demand [Fred get stuffed], i.e Speaker disdains Fred and his actions and opinions with respect to the matter in hand.
(c) ◇[you say that again] ∧ PERMITTED[you say that again] entails the demand [you say that again] because Speaker agrees with what the Hearer has said.

---

**11.4.9**  What is the semantics of the modal in *John can be out at any time of the day*?

**Answer:** Root, as in 69: *John can arrange/choose to be out at any time of the day*. Epistemic as in *It is possible (to find) that John is out at any time of the day*. Deontic as in *It is permitted for John to be out at any time of the day*.

---

**11.4.10**  There seem to be different implicatures in the most likely interpretations for (a) and (b), what are they?
(a) I can't paint my house purple.
(b) I couldn't paint **MÝ** house purple!

**Answer:** In (b) there is an implication that Speaker wants to paint the house purple and there is some external force preventing Speaker using this particular colour. The most likely interpretation is therefore: **N**[I want to paint my house purple $\wedge$ ¬PERMITTED[I paint my house purple]]. It is less likely that the desire is rendered impossible due to, e.g. the unavailability of purple paint: **N**[I want to paint my house purple $\wedge$¬$\diamond$[I paint my house purple]]. In (b) the stress on *my* implies that there is common ground that someone's house (not Speaker's) is painted purple and either Speaker disapproves the choice of colour – ¡[**N**[¬$\diamond$[I paint my house purple]] "there is no hypothetical world in which I could paint **MY** house purple". Or, as in (a), there was (in some past world) some external force preventing Speaker using this particular colour – **P**[I want to paint my house purple $\wedge$¬PERMITTED [I paint my house purple]] or perhaps even **P**[I want to paint my house purple $\wedge$¬$\diamond$[I paint my house purple]].

---

**11.4.11**  Why do you think all the possibilities in (a) are OK, but (b) are dubious?
(a) In her state of mind she could/may/might kill someone.
It could/may/might be that prices will go down.
(b) ??In her state of mind she can kill someone.
??It can be that prices will go down.

**Possible answer:** Both (a) and (b) are about hypothetical possibilities; but the use of *can* in (b) suggests an ability to control the situation which seems to contradict this.

---

11.5.1  Where possible, assign the italicized NPs in (a-d) and the zero anaphor in (a) one of the effector roles and briefly explain your decision.
    (a) *Sally* cut herself on *the broken glass* and *[∅]* yelled.
    (b) *The tornado* took the roof off the barn.
    (c) *The river* swept him away.
    (d) O J was prosecuted on *circumstantial evidence*.

**Answer:** (a) If Sally deliberately cut herself, then she is agent and the broken glass is instrument. But we don't know this, so it is preferable to analyze this: *Sally*$_{\text{effector}}$ did something that caused *the broken glass*$_{\text{instrument}}$ to cut *her*$_{\text{patient}}$ and ∅$_{\text{effector}}$ yelled. The broken glass has the role of instrument because it is nonmotile. The ∅ anaphor is best treated as an effector because the yell is most probably not a deliberate and willed act but a spontaneous response to the pain and shock of being cut.
(b) *The tornado*$_{\text{force}}$ because capable of independent motion. Similarly (c) *The river*$_{\text{force}}$.
(d) *circumstantial evidence*$_{\text{means/instrument}}$ because it is an abstract effector used by some agent.

---

11.5.2  Assign thematic roles to the italicized NPs in (a-k).
    (a) *Sandy* pretended to forget his name.
    (b) *The lamppost* was hit by *a truck*.
    (c) *Rex* just knew he was in trouble.
    (d) *Sally* gazed at Fabio.
    (e) *Jim* was bamboozled by *a con trick*.
    (f) *Ed* looked at *the bridge*.
    (g) *The loot* is under *the mattress*.
    (h) *The committee* meets at *10*.
    (i) Gim*me a chocolate*!
    (j) *Merv* has *a new car*.

(k) *Everyone there* saw *the accident*.

**Answer:** (a) Sandy$_{agent}$.

(b) The lamppost$_{patient}$ was hit by a truck$_{force}$.

(c) Rex$_{experiencer/cognizer}$.

(d) Sally$_{agent}$.

(e) Jim$_{patient}$ was bamboozled by a con trick$_{means/instrument}$.

(f) Ed$_{agent}$ looked at the bridge$_{locative}$.

(g) The loot$_{theme}$ is under the mattress$_{locative}$.

(h) The committee$_{effector}$ meets at 10$_{locative}$.

(i) Gimme$_{recipient/locative}$ a chocolate$_{theme}$!

(j) Merv$_{possessor/locative}$ has a new car$_{theme}$.

(k) Everyone$_{perceivers}$ there saw the accident$_{theme}$.

---

11.5.3  In English, it is usual for there to be some clause structure in which an argument of the core of the clause does NOT fall under the scope of a preposition, e.g. the recipient in *George gave the bike to Harry* is under the scope of 'to' but this is not the case in *George gave Harry the bike*. The locative core argument of relocation verbs like *go* and *put* cannot lose their preposition. One test for whether an argument is core or not comes from asking questions like the ones below. (i) and (ii) are two model sentences; in answering questions (a-f), what is the smallest part of the clause that is acceptable? Why is (c) strange in this context?

(i)  *Yesterday in London the Queen opened Parliament.*

(ii) *Sue went to Boston yesterday.*

    (a)    What happened yesterday?

    (b)    What happened in London?

    (c)    ??What happened to Boston?

    (d)    Where did she do it?

    (e)    As briefly as possible, what did the Queen do?

    (f)    As briefly as possible, what did Sue do?

**Answer:**

| | |
|---|---|
| (a)  What happened yesterday? | (i) *The Queen opened Parliament in London* or *The Queen opened Parliament* (core clause). <br> (ii) *Sue went to Boston* but not felicitously *??Sue went*. |
| (b)  What happened in London? | *The Queen opened Parliament*. |
| (c)  ??What happened to Boston? | *??Sue went there* – both question and answer are peculiar in this context. |
| (d) Where did she do it? | (i) *London*. <br> (ii) **Boston* – in this context. |
| (e)  As briefly as possible, what did the Queen do? | *Opened Parliament*. |
| (f)  As briefly as possible, what did Sue do? | *Went to Boston*. <br> *??Went*. |

Questioning where the event happened or where the actor did it is perfectly satisfactory with peripheral locatives, but not with core locatives. Usually, questioning what the actor did requires the core locative to be specified, but it is optional whether or not a peripheral locative is mentioned.

---

11.5.4 The beneficiary and maleficiary are usually regarded as subsidiary roles; for instance in *Jed helped the old lady across the road* 'the old lady' is a beneficiary of the action, but the NP would usually be regarded as a theme; in *Jed battered the old lady to death* 'the old lady' is a maleficiary and Jed the malefactor, but 'Jed' has the thematic role of agent, and 'the old lady' that of patient. In *Harry sold Jim a mower* can you argue both that Harry is an agent and also a

**Answer:** What this tells about thematic relations is that a given argument may simultaneously play a number of different roles, presumably because events can be viewed from different perspectives. In *Harry sold Jim a mower* Harry is an agent and also a source for the mower; and Jim is recipient, goal, and also beneficiary. A recipient is just one kind of goal.

---

12.2.1 In (a-b) which are the functions and which the arguments?
(a) [$_{State}$BE([$_{Thing}$BILL], [$_{Place}$IN([$_{Thing}$BOSTON])])]
(b) [$_{Event}$INCH([$_{State}$BE([SKY], AT([$_{Property}$RED])])])]

**Answer:** The functions in (a) are BE and IN; the arguments of BE are [BILL], [IN([BOSTON])] and that of IN is BOSTON. The functions in (b) are INCH, BE, and AT; the arguments of INCH are BE([SKY], AT([RED]), the argument of BE is SKY, and that of AT is RED.

---

12.2.2 The idea of a 3D model would nicely offer one criterion for distinguishing kinds of animals from one another, e.g. cats from dogs. However, Jackendoff seems to imply that the model is purely visual. If this were true, blind people would be at a much greater disadvantage than appears to be the case – to use one of Jackendoff's examples, they wouldn't be able to distinguish running from jogging, which is simply not the case. How can we exploit Jackendoff's insight without such an unwelcome and unwarranted limitation?

**Answer:** It may be that '3D' model is the appropriate term for the stored visual image, but there will be comparable models accessible to the other senses and to proprioception.

---

12.2.3 Write conceptual structures for the following:

(a) to the floor
(b) onto the floor
(c) Harry pointed to the floor.
(d) Tom grew old.
(e) Harry went to London.
(f) The rug stretched from the study to the bathroom.
(g) Harry put the spoon in his mouth.
(h) The meeting is in the morning.
(i) The boss moved the meeting from four to six
(j) Harry sang because he was happy.

<div align="center">[Assume SING is a primitive].</div>

**Answer:** (a) $[_{Path}TO([_{Thing}FLOOR])]$

(b) $[_{Path}TO([_{Place}ON([_{Thing}FLOOR])])]$

(c) $[_{Event}POINT([_{Thing}HARRY], [_{Path}TO([_{Thing}FLOOR])])]$
Unlike the sign pointing to Phoenix, this is not Harry's permanent state or orientation.

(d) $[_{Event}INCH([_{State}BE([_{Thing}TOM], AT([_{Property}OLD])])])]$

(e) $[_{Event}GO([_{Thing}HARRY], [_{Path}TO([_{Thing}LONDON])])]$

(f) $[_{State}EXT([_{Thing}RUG], \begin{bmatrix} FROM([_{Thing}STUDY] \\ _{Path}TO([_{Thing}BATHROOM]) \end{bmatrix})]$

(g) $[_{Event}CAUSE([_{Thing}[HARRY]^{\alpha}{}_A, [_{Event}GO([_{Thing}SPOON]_A,$
    $[_{Path}TO([_{Place}IN([_{Thing}MOUTH\ OF([_{Thing}\alpha])])])])])]$

(h) $[_{State}BE_{Temp}([_{Event}MEETING], [_{Place}IN_{Temp}([_{Time}MORNING])])]$

(i) $[_{Event}CAUSE([_{Thing}BOSS], [_{Event}GO_{Temp}([_{Event}MEETING],$
    $\begin{bmatrix} FROM_{Temp}([_{Time}FOUR]) \\ _{Path}\ TO_{Temp}([_{Time}SIX]) \end{bmatrix})])]$

(j) $\begin{bmatrix} [_{Event}\ SING([_{Thing}HARRY]^{\alpha}{}_A)] \\ [_{Cause}\ FROM\ [_{State}\ BE_{Ident}([\alpha]_A, [AT_{Ident}([_{Property}HAPPY])])]] \end{bmatrix}$

---

12.2.4 Create a Jackendoff style lexicon entries for
   (a) *eat*

(b) *sell*
(c) *fail* [e.g. fail to arrive]
(d) *open*  [Assume  the  internal  predicates  are  CAUSE(GO(TO(OPEN)))]

**Answer:**

(a)
$$
\begin{bmatrix}
\text{eat} \\
\text{V} \\
[_{\text{Event}}\text{CAUSE}([_{\text{Thing}}\ ]^{\alpha}{}_{\text{A}},\ [_{\text{Event}}\text{GO}([_{\text{Thing}}\text{NOT-LIQUID}]_{<\text{A}>}, \\
\qquad [_{\text{Path}}\text{TO}([_{\text{Place}}\text{IN}([_{\text{Thing}}\text{MOUTH OF}([_{\text{Thing}}\alpha])])])])])]
\end{bmatrix}
$$

(b)
$$
\begin{bmatrix}
\text{sell} \\
\text{V} \\
\text{CAUSE}([\ ]^{\alpha}{}_{\text{A}}, \begin{bmatrix} \text{GO}_{\text{Poss}}([_{\text{Thing}}\ ]^{\beta}{}_{\text{A}}, \begin{bmatrix}\text{FROM}([\alpha]) \\ \text{TO}([\ ]^{\gamma}{}_{<\text{A}>})\end{bmatrix}) \\ [\text{EXCH}([\text{GO}_{\text{Poss}}([\text{MONEY}], \begin{bmatrix}\text{FROM}[\gamma] \\ \text{TO}[\alpha]\end{bmatrix})])] \\ {}_{\text{Event}}\ \text{AFF}([\alpha],[\beta]) \end{bmatrix})
\end{bmatrix}
$$

(c)
$$
\begin{bmatrix}
\text{fail} \\
\text{V} \\
\begin{bmatrix}\text{CS}^{-}([\alpha],\ [_{\text{Event}}\ \text{AFF}\ ([\alpha],\ )]_{\text{A}}\ ) \\ {}_{\text{Event}}\ \ \text{AFF}\ ([\ ]^{\alpha}{}_{\text{A}},\ \ )\end{bmatrix}
\end{bmatrix}
$$

(d)
$$
\begin{bmatrix}
\text{open} \\
\text{V} \\
[_{\text{Event}}\text{CAUSE}([_{\text{Thing}}\ ]^{\alpha}{}_{\text{A}},\ [_{\text{Event}}\text{GO}([_{\text{Thing}}\ ]^{\beta}{}_{\text{A}},\ [_{\text{Path}}\text{TO}([\text{OPEN}])]\ )] \\ \text{AFF}(<[\alpha]>,[\beta])
\end{bmatrix}
$$

It would be preferable to indicate also that the path went from NOT-OPEN to OPEN; NOT-OPEN is preferred here to CLOSED because, e.g. a door can be ajar and subsequently opened, and that opening a fête does not imply that it is previously closed. Better still would be to further decompose OPEN into ALLOW READY ACCESS.

12.2.5  Given that the lexicon entry for the verb *butter* is

$$
\left[
\begin{array}{l}
\text{butter} \\
[_\text{V} \text{ N}] \\
[_\text{Event}\text{CAUSE}([_\text{Thing}\ ]^\alpha{}_\text{A}, \\
[_\text{Event}\text{INCH}([_\text{State}\text{BE}([_\text{Thing}\text{BUTTER}],[_\text{Place}\text{ON}_\text{Dist}([_\text{Thing}\ ]^\beta{}_\text{A})])])])]
\end{array}
\right]
$$

> In *Jo buttered the bread* where would the semantic content of the various listemes go during argument fusion? (The place function $\text{ON}_\text{Dist}$ is distributive *on*, with the approximate meaning "all over".)

**Answer:** *Jo* goes into the $[_\text{Thing}\ ]^\alpha{}_\text{A}$ location, and *the bread* into $[_\text{Thing}\ ]^\beta{}_{<\text{A}>}$.

---

12.3.1  What would you say is the thematic role of 'Jed' in *Francis made Jed carry the load*?

**Answer:** The MR of 'Jed' in *Francis made Jed carry the load* is undergoer; he is the patient of the causative 'made', but the effector in the proposition 'Jed carry the load'. It is controversial whether he is agent, force, or instrument. Against him being agent is that he is not a willful instigator of the action; against him being instrument is that he is animate; against him being force is that he is controlled by an agent, 'Francis'.

---

12.3.2  Classify the verbs in (a–e) according whether they are activities, states, achievements, accomplishments, or causatives.
(a) Sally is a virgin.
(b) Tom lost his wallet.
(c) Ed threw away his old love-letters.
(d) The frost killed the petunias.
(e) The wind is blowing noisily.

**Answer:** (a) *Sally is a virgin* is a state.
(b) *Tom lost his wallet* is a punctual achievement.
(c) *Ed threw away his old love-letters* is a causative.
(d) *The frost killed the petunias* is a causative.
(e) *The wind is blowing noisily* is an activity.

---

12.3.3 Write RRG-style semantic representations for the verbs in (a–j).
   (a) The ice melted.
   (b) The motor hummed.
   (c) Shiela was astonished at Joe's promotion.
   (d) The sky darkened.
   (e) The sun melted the snowman.
   (f) Mary shelled the peas.
   (g) Eddie spotted his sister's umbrella.
   (h) The meat was put in the fridge.
   (i) Sally broke the window with her handbag.
   (j) Harry skinned the rabbit.

**Answer:**
(a) *The ice$_x$ melted*     [BECOME **liquid$'$/melted$'$**($x_{U\text{-patient}}$)].
(b) *The motor$_x$ hummed*     [**do$'$**($x_{A\text{-effector}}$,[**hum$'$**(x)])].
(c) *Shiela$_x$ was astonished at Joe$_y$'s promotion*
[**do$'$**($\varnothing$,[**promote$'$**($\varnothing$,$y_{theme}$)])] CAUSE [BECOME
                           **astonished$'$**($x_{U\text{-experiencer}}$)].
(d) *The sky$_x$ darkened*     [BECOME **dark$'$**($x_{U\text{-theme}}$)].
(e) *The sun$_x$ melted the snowman$_y$*
       [**do$'$**($x_{A\text{-force}}$)] CAUSE [BECOME **liquid$'$**($y_{U\text{-patient}}$)].
(f) *Mary$_x$ shelled the peas$_y$*
[DO($x_{A\text{-agent}}$,[**do$'$**(x)])] CAUSE [BECOME NOT
                 **be_in$'$**($shell_{locative}$, $y_{U\text{-theme}}$)].
(g) *Eddie$_x$ spotted his sister's umbrella$_y$*
             [INGR **see$'$**($x_{A\text{-experiencer}}$, $y_{U\text{-theme}}$)].
(h) *The meat$_x$ was put in the fridge$_y$*
      [**do$'$**($\varnothing$,$\varnothing$)] CAUSE [BECOME **be_in$'$**($y_{locative}$,$x_{U\text{-theme}}$)].
(i) *Sally$_x$ broke the window$_y$ with her handbag$_z$*
[[**do$'$**($x_A$,$\varnothing$)] CAUSE [BECOME **be_at$'$**($y_{locative}$,$z_{theme}$)]] CAUSE

$$[\text{BECOME } \textbf{broken}'(y_{\text{U-patient}})].$$

(j) *Harry$_x$ skinned the rabbit$_y$*

$$[\textbf{do}'(x_A, \varnothing)] \text{ CAUSE } [\text{NOT } \textbf{be\_on}'(y_{\text{U-locative}}, \textbf{skin}'_{\text{theme}})].$$

---

12.3.4 Suggest a common logical structure for (a) and (b). How would the MR be chosen?
 (a) Harry is Sue's husband.
 (b) Sue is Harry's wife.

**Answer:** Finding a common logical structure for (a) *Harry is Sue's husband* and (b) *Sue is Harry's wife* is not so easy as it appears at first sight: $\textbf{be\_married\_to}'(x,y) \wedge \textbf{male}'(x) \wedge \textbf{female}'(y)$ is a possibility. (a) result from profiling x as trajector and (b) from profiling y as trajector.

---

12.3.5 Why is (b) so much more unnatural than (a)? Can you suggest a common logical structure for (a) and (b). How would the MR be chosen?
 (a) The lamp is on the table.
 (b) The table is under the lamp.

**Answer:** (a) *The lamp is on the table* locates the 'figure' on the 'ground' (in Talmy's terminology); whereas (b) *The table is under the lamp* locates the 'ground' beneath the 'figure'. These terms arise from the typical characteristics of lamps and tables: the function of a table is to have things done and put on it; it is larger and less moveable than a lamp. There is also the fact that it is often the case that when *X is under Y*, Y blocks X from view (see Talmy 1978, Vandeloise 1991, Svorou 1994 for discussion). A possible paraphrase of both (a) and (b) is *x is in a certain vertical location with respect to y*. Resolving this into a common semantic structure is difficult and perhaps pointless: it is surely preferable to treat one sense of $\textbf{be\_on}'(x,y)$ as synonymous with one sense of $\textbf{be\_under}'(y,x)$ such that x and y have distinct thematic relations in the two logical structures. It is appropriate to apply the same procedure to other converse predicates, and

make it a general condition that the arguments of a pair of converse predicates hold converse thematic relations.

---

13.2.1  Number in Fijian pronouns has four subcategories, singular, dual, paucal (approx. 3-12), plural; e.g.
(a) *E la'o mai*    3.SINGULAR go here   "He/She/It came"
(b) *Rau la'o mai*     3.DUAL go here
(c) *Ratou la'o mai*   3.PAUCAL go here
(d) *Ra la'o mai*      3.PLURAL go here
Suggest enlightening translations for (b)-(d).

**Answer:** (b) "The two of them came" or "They both came".
(c) "A few came" or "There were a few who came".
(d) "They came" or "There were quite a lot came".

---

13.2.2  Comment on the countability of the italicized NPs in (a1–2) and (b1–2)

(a1)  Will you have *some more potato*?
(a2)  Will you have *some more potatoes*?

(b1)  We had *pie* for lunch.
(b2)  We had *pies* for lunch.

**Answer:** (a1) refers to the substance "potato" and would be used when a part of a mass of mashed potato or even an unspecified part of a quantity of potatoes is on offer.
By contrast (a2) can only be used when a quantity of individual potatoes is on offer.
Similarly for (b1) and (b2).
(b2) could only be used when more than one person ate at least one pie each for lunch.
(b1) could also be used in this situation, but is more typically used when each person at lunch had part of a pie (even when there are several pies altogether).

---

**13.2.3** How would you interpret *We had lambs for dinner*?

**Answer:** *We had lambs for dinner* implies that each diner ate at least one whole lamb – which is extremely improbable. However, one could say *Two lambs were served to 12 people*.

---

**13.2.4** What markers of NP-internal number registration can you think of?

**Answer:** *A(n), each, every, either, one* identify singular countables; *several, many, both, (a) few* and all natural numbers >1 identify plural identify countables; *much* and *(a) little* identify (singular) uncountables.

---

**13.2.7** Comment on the fact that both singular and plural external number registration is possible with proper names like *the United States* and *the Himalayas*.

**Answer:** They can be viewed as, respectively, a collection of states and mountains; or as a single nation-state and mountain range.

---

**13.3.1** Give a colloquial English gloss for (a-c).
  (a) $\forall x,y[x \subset y$ iff $(x \subseteq y) \wedge \neg(y \subseteq x)]$
  (b) $x \subseteq y \subseteq z \rightarrow x \subseteq z$
  (c) $\forall b,x,y[b=x \cup y$ iff $(x \subseteq b \wedge y \subseteq b) \rightarrow \forall z[z \subseteq b \rightarrow (z \subseteq x \vee z \subseteq y)]]$

**Answer:** (a) For every x and y, x is a proper subsemble of y if, and only if, x is a subensemble of y and y is not a subensemble of x. (b) If x is a subsemble of y and y is a subsemble of z, then x is a subsemble of z. I.e. the subsemble relation is transitive. (c) For every b, x, and y, ensemble b is the merge of ensembles x and y if, and only if, when x is a subsemble of b and y is a

subensemble of b, then any z which is a subensemble of b is a subensemble of x and/or y.

---

13.3.2  Suppose that c={x} and c⊆b. Does it follow that x∈b or x⊆b?

**Answer:** x is a member of atomic ensemble c, not a subensemble (subset), hence x∈b and b is a superensemble of c. x⊆b is an ill-formed formula (an improper formulation).

---

13.3.3  The term 'parts' used in this chapter is borrowed from mathematical logic and refers to both "parts" and "pieces" or "bits". What is the difference between 'parts' as in *spare parts for a car* and 'pieces/bits' as in *pieces/bits of the car were littered all over the road*?

**Answer:** *Parts*, but not *pieces/bits*, are often functional and/or motivated components of a structured configuration – think of car parts, or body parts. See Cruse 1986:157ff.

---

13.4.1  Would it be true to say of [*a(n)* x: Cx](Sx) that *a(n)* binds x and the predicates C and S denote ensembles ⟦c⟧ and ⟦s⟧ respectively of which x is a part? If you agree, how would you represent that x is a part of c and s?

**Answer:** Yes, loosely speaking. More accurately, *a(n)* binds x within the restricted quantifier [*a(n)* x: Cx] in which C is the restrictor; the restricted quantifier binds x within (Sx). The semantic effect of the binding is that $|x| \geq 1$ and x is a part of c and of s, symbolized x⊆c∩s: cf. line (iv) of 28.

---

13.4.2  In the formula [*a(n)* x: Cx](Sx), is C in the domain of S? In other words, is S a second order predicate?

**Answer:** No. S is a predicate on x, which is bound by the restricted quantifier [*a(n)* x: Cx]. Within the restricted quantifier, C is a predicate on the x bound by *a(n)* thus restricting the scope of *a(n)*.

---

13.4.3 Give a semantics, based on [*a(n)* x: Cx](Sx), for *One man is tall*.

**Answer:**

| | |
|---|---|
| [*one* x: Mx](Tx) | (i) |
|    [*one* x: Mx] ▸ $\lvert x \rvert = 1 \wedge x \subseteq m$ | (ii) |
|       x⊆t | (iii) |
| [*one* x: Mx](Tx) → $\lvert x \rvert = 1 \wedge x \subseteq m \cap t$ | (iv) |
| [*one* x: Mx](Tx) ←→ $\lvert m \cap t \rvert \geq 1$ | (v) |
| [*one* x: Mx](Tx) ▷ $\lvert m \cap t \rvert = 1$ | (vi) |

---

13.5.1 Using the templates provided in §13.5, suggest semantic analyses for the quantified NPs in (a–d).
  (a) All wildfire is dangerous.
  (b) Two cars crashed.
  (c) Not a creature stirred.
  (d) No two are identical.

**Answer:**
(a)  [*all* y: y⊆[∅$_Q$ x: Wx]], cf. 44.
(b)  [*two*: y⊆[PL$_Q$ x: Cx]], cf. 43.
(c)  [*not* z: z⊆[*a(n)* y: y⊆[∅$_Q$ x: Cx]]], cf. 48.
(d)  [*no* z: z⊆[*two* y: y⊆[PL$_Q$ x: Fx]]]
The referent of F is not revealed in (d).

---

13.5.2 What is the difference in meaning (if any) between (a), (b) and (c):
  (a$_1$)  Harry invited us all back to his place.

  (a$_2$)  Suzie blew us all a kiss.

(b$_1$) Harry invited everyone back to his place.
(b$_2$) Suzie blew us, every one, a kiss.

(c$_1$) Harry invited each of us back to his place.
(c$_2$) Suzie blew each of us a kiss.

**Answer:** (a) and (b) are virtually synonymous in that there could either have been just one broadcast act of invitation/kiss blowing or there could have been any number separate invitations/kisses blown, the upper bound being the state of affairs described in (c). The use of *each* indicates that there were as many separate acts of invitation/kiss blowing as there were recipients of the invitations/kisses.

---

13.6.1 In informal style colloquial language *this* may be used to introduce an entity that plays some major function within the reported anecdote, e.g.

    (a)    There was this guy in a pub offered me tickets to the Floyd concert below face value. ...

What evidence could you adduce that 'this' in (a) is indefinite rather than definite?

**Answer:** It is used as a presentational device when first mentioning an entity that has at least minor importance in a discourse (text). We can substitute the indefinite article *a(n)* for it in a countable singular, *some* for an uncountable singular and for its plural counterpart *these*. It partitions an ensemble (in this case the set of guys in the pub) to create another (in this case a unit set) whereas a definite does not (see Prince 1981, Gernsbacher 1990).

---

13.6.2 What is the difference in meaning between (a) and (b)? Try to explain the difference.
(a) A first baby born in Australia in the year 2000.
(b) The first baby born in Australia in the year 2000.

**Answer:** (a) Some parent for whom it is the first baby and it is born in Australia at any time during the year 2000. (b) The baby is the first baby born in Australia in the year 2000 – probably during the very early hours of Saturday January 1.

---

13.6.3  Comment on the use of definite and indefinite NPs in (a–c).
(a)  A truck went by and the fumes were nauseating.
(b)  Max had a cholera shot and the pain was excruciating.
(c)  The daughter of one of my students has been killed in a car accident.

**Answer:** In (a) 'A truck' is indefinite because the NP introduces the referent; but given the maxim of relation and the frame for *truck* based on our encyclopedic knowledge of trucks, 'the fumes' must be those produced by the aforementioned truck. The explanation for the indefinite 'a cholera shot' and 'the pain' in (b) is comparable. In (c) the indefinite NP 'one of my students' presents an individual anchored to Speaker, but otherwise (presumably) unknown to Hearer; the definite 'the daughter' is justified by the fact that this entity is uniquely newsworthy because of the tragedy and the fact that she was the only one of the student's daughters to be killed. In these circumstances it is of no relevance whether or not the student had any other daughters. The indefiniteness of 'a car accident' is required because it is one among many.

---

13.6.4  Explain the indefinite NPs containing superlatives in
(a)  A most enjoyable party
(b)  A personal best

**Answer:** 'A most' is superlative on the adjective 'enjoyable' (cf. the synonymous *A very enjoyable party*). (b) *A personal best* means something like "the best that the person has done to date".

---

**13.6.5** How do you think the semantics for *The lamb is delicious* would look? Assume that line (iv) of 68 is replaced by $\forall x[\textbf{be\_delicious}'(x) \rightarrow \textbf{food\_source}'(x)]$ and line (v) by $\forall y[\boldsymbol{\lambda} x[\textbf{be\_delicious}'(x) \wedge \textbf{lamb}'(x) \wedge \textbf{food\_source}'(x)](y) \rightarrow |y| \neq 0]$.

**Answer:**

$$[\textit{the } y: y \subseteq [\varnothing_Q x: Bx]](Dy) \tag{i}$$

$$[\textit{the } y: y \subseteq [\varnothing_Q x: Bx]] \blacktriangleright \exists! y[y \subseteq [\varnothing_Q x: Bx] \rightarrow y = [\varnothing_Q x: Bx]] \tag{ii}$$

$$[\varnothing_Q x: Bx]] \blacktriangleright |x| \neq 0 \wedge x \subseteq b, \therefore |b| \neq 0 \tag{iii}$$

$$y \subseteq [\varnothing_Q x: Bx] \blacktriangleright y \subseteq x \subseteq b, \therefore y \subseteq b \wedge |b| \neq 0 \tag{iv}$$

$$[\textit{the } y: y \subseteq [\varnothing_Q x: Bx]] \blacktriangleright \exists! y[y \subseteq b \rightarrow y = b \wedge |b| \neq 0 \tag{v}$$

$$[\textit{the } y: y \subseteq [\varnothing_Q x: Bx]](Dy) \rightarrow \exists! y[y \subseteq b \cap d \rightarrow y = b], \therefore b \cap d = b \tag{vi}$$

$$[\textit{the } y: y \subseteq [\varnothing_Q x: Bx]](Dy) \longleftrightarrow \exists! y[y \subseteq b \cap d \rightarrow y = b] \wedge |b \cap d| \neq 0 \tag{vii}$$

---

**13.6.6** Show that if it is true at an index that *The mice are happy* then there are no mice which are not also happy (at that index).
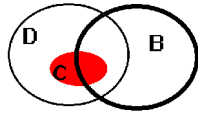
**Answer:**

*The mice are happy* in $M^{w,t}$ → *No mice are not happy* in $M^{w,t}$

$$[\textit{the } y: y \subseteq [PL_Q x: Mx]](Hy) \longleftrightarrow \exists! y[y \subseteq m \cap h \rightarrow y = m] \wedge |m \cap h| > 1,$$
$$\therefore y \subseteq m \cap h \wedge |y| > 1 \tag{i}$$

$$[\textit{no } y: y \subseteq [PL_Q x: Mx]] \neg (Hy) \tag{ii}$$

$$[\textit{no } y: y \subseteq [PL_Q x: Mx]] \blacktriangleright |y| = 0 \vee y \nsubseteq m \tag{iii}$$

$$[\textit{no } y: y \subseteq [PL_Q x: Mx]](Hy) \rightarrow |y| = 0 \vee y \nsubseteq m \cap h \tag{iv}$$

$$[\textit{no } y: y \subseteq [PL_Q x: Mx]] \neg (Hy) \rightarrow |y| = 0 \vee y \subseteq m \cap h \tag{v}$$

$$[y \subseteq m \cap h \wedge |y| > 1] \rightarrow [|y| = 0 \vee y \subseteq m \cap h] \tag{vi}$$

$$\therefore [\textit{the } y: y \subseteq [PL_Q x: Mx]](Hy) \rightarrow$$
$$[\textit{no } y: y \subseteq PL_Q x: Mx]] \neg (Hy) \tag{vii}$$

Line (vi) follows from lines (i) and (v) when in (v), $|y| > 1$.

---

**13.7.1** Draw a Venn diagram to demonstrate that *some* is NP↑ Pred↑.

**Answer:**



(i) Some boys (B) drive (D) carelessly (C); (ii) Some boy (B) drivers (D) are careless (C) (and all careless people are drivers)

---

**13.7.2** Examine the claim that the monotonicity of the definite is NP↑ Pred↑ (base your discussion on either *his mother* or *John*).

**Possible Answer:**

John, my manager, signed me up with Virgin

⊨ John signed me up with Virgin        NP↑

John screamed loudly ⊨ John screamed        Pred↑

---

**13.7.3** Some quantifiers, such as *exactly half, exactly one, exactly 10,000*, are NONMONOTONIC. Demonstrate this for at least one of them.

**Possible Answer:**

(Exactly one apple is sweet ⊭ Exactly one red apple is sweet) ∧ (Exactly one red apple is sweet ⊭ Exactly one apple is sweet).

(Exactly one magpie sings ⊭ Exactly one magpie sings sweetly) ∧ (Exactly one magpie sings sweetly ⊭ Exactly one magpie sings).

---

(a) Show that *all* and *no* are contraries and not contradictories.

(b) Identify f−f∩g in the Venn diagram where ☐ is g and ◯ is f:
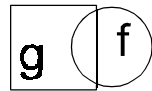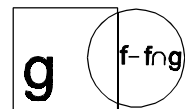


**Answer:** (a) If $Q_1$ and $Q_2$ are contradictories then $Q_1 = \neg Q_2$, if they are contraries then asymmetrically $Q_1 \blacktriangleright \neg Q_2$.

(i) *Not all bachelors are happy* ⊯ *No bachelors are happy* and *All bachelors are happy* ⊯ *Some bachelor is happy* (X⊯Y means "X is not synonymous with Y").

(ii) *No bachelors are happy* ⊢ *Not all bachelors are happy* and *All bachelors are happy* ⊢ *Some bachelor is happy*.

(b)



---

13.7.5 On most accounts, entailments cannot be determined for interrogative environments because they don't have truth values. However from $a_1$ and $b_1$ we can apparently deduce $a_2$ and $b_2$. What grounds do you think might justify this view?

$a_1$. Do/don't you have any crayons?
$a_2$. Do/don't you have any red crayons?
$b_1$. Did/didn't you break any plates?
$b_2$. Did/didn't you cause something to happen to any plates?

**Answer:** For instance, a reasonable answer to the question *Do you have any crayons?* is *Yes* if the respondent has red crayons and no others; but *Do you have any red crayons?* asks about red crayons and not about crayons in general; so if the respondent has some crayons but no red ones, it is inappropriate to answer *Yes*. Comparable reasoning for other examples is left to you.

13.7.6  Which of the following pairs, A or B, logically implies the other, and what kind of monotonicity is indicated?

 (i)  A:  Harry ate some red beans   B:  Harry ate some beans
 (ii)  A:  Every rocking horse has   B:  Every toy is painted
              a painted face
 (iii)  A:  Not all foreign students   B:  Not all students got A's
              got high grades
 (iv)  A:  Fred doesn't like any   B:  Fred doesn't like any
              creepy-crawlies              spiders
 (v)  A:  There are no Persian   B:  There are no carpets in
              carpets in this house              this place

**Answer:** (i) A $\Vdash$ B, NP$\uparrow$.
(ii) Neither.
(iii) A $\Vdash$ B, NP$\uparrow$ Pred$\downarrow$.
(iv) A $\Vdash$ B, NP$\downarrow$.
(v) B $\Vdash$ A, NP$\downarrow$ Pred$\downarrow$.

---

13.8.1    Negation and quantifiers. In the Pred$_2$ clause [Qx:Fx]([Qy:Gy](Hxy)) there are five points of negation logically possible: ¬[Qx:¬Fx](¬[Qy:¬Gy]¬(Hxy)). However a sentence with more than three becomes almost impossible to interpret in any normal context of use; compare (i) and (ii):

   (i)  ¬[*every* x: Px](¬[*some* y: Py]¬(Lxy)) "Not everyone doesn't love noone"
   (ii)   ¬[*every* x: ¬Px](¬[*some* y: Py]¬(Lxy)) "Not everything not a person doesn't love noone"

Notice that ¬[Qx:Fx] = [¬Qx:Fx] e.g. ¬[*some* y: Py] = [¬*some* y: Py] = [*no* y: Py]. This is because the whole NP is in the scope of negation:

   (iii)  NP$_y$[¬ N$'$[Q[*some*] N[*person*]$_{N'}$]$_{NP_y}$] "noone"

Only the rightmost Q is negated in ¬[Qx:Fx], cf. *not all of some men* but *\*all of no men*. In surface structure (iii) is the only possibility so that the logically possible ¬[Qx:¬Fx] must be expressed through circumlocution, cf. (ii) where ¬[*every* x: ¬Px] must be expressed using two NPs "not

everything not a person". Also, because of the constraint in (iii), negation of the restrictor (corresponding to the head noun of the NP) as in [*many* x: ¬Ax] sometimes allows for the scope of the negative to be indicated by heavy stress on the head noun provided it is within the scope of a negative:

(iv)   [*many* x: ¬Ax]([*the* y: Ty](Hxy)) "Not many **ARR**ows hit the target" = "Many things that were not arrows hit the target"

(v)   [*some* y: ¬Py]([*every* x: Px](Lxy)) "There is something not a person which everyone loves" = "It is not a **PER**son which everyone loves"

Radical negation (presupposition denial) is found in instances like (vi–viii).

(vi)   [*every* x: Px](¬[*some* y: Py]¬(Lxy)) "Everyone doesn't love noone"

(vii)   [*every* x: Px]([*some* y: ¬Py]¬(Lxy)) "Everyone doesn't love something other than a person"

(viii)  [*some* y: Py]([*every* x: ¬Px]¬(Lxy)) "There is someone whom everything not a person doesn't love"

Now try to match up sentences (a–j) with the semantic descriptions (r–z).

(a) Not many arrows didn't hit the target.

(z)¬[*many* x: Ax]([*the* y: Ty]¬(Hxy))

(b) Many arrows didn't hit the **TAR**get [but something else].

(y) [*many* x: Ax]([*the* y: ¬Ty](Hxy))

(c) Many arrows didn't hit the target [they missed].

(x) [*many* x: Ax]([*the* y: Ty]¬(Hxy))

(d) The target wasn't hit by **MA**ny arrows [only a few].

(w) [*many* x: Ax](¬[*the* y: Ty](Hxy))

(e) The target, not many arrows didn't hit.

(v) [*many* x: ¬Ax]([*the* y: Ty](Hxy))

(f) Many arrows hit the thing that wasn't a target.

(u) [*the* y: Ty](¬[*many* x: Ax]¬(Hxy))

(g) Many things that weren't arrows hit the target.

(t)  [*the* y: Ty]([*many* x: Ax]¬(Hxy))

(h) The target was hit by many things that weren't arrows.

(s) [*the* y: Ty](¬[*many* x: Ax](Hxy))

(j) The target wasn't **HIT** by many arrows [most of them missed].
(r) [*the* y: Ty]([*many* x: ¬Ax](Hxy))

**Answer:** Matching up sentences with semantic descriptions.
(a) Not many arrows didn't hit the target →
  (z)¬[*many* x: Ax]([*the* y: Ty]¬(Hxy))
(b) Many arrows didn't hit the **TAR**get [but something else]. →
  (w) [*many* x: Ax](¬[*the* y: Ty](Hxy))
(c) Many arrows didn't hit the target [they missed]. →
  (x) [*many* x: Ax]([*the* y: Ty]¬(Hxy))
(d) The target wasn't hit by **MA**ny arrows [only a few]. →
  (s) [*the* y: Ty](¬[*many* x: Ax](Hxy))
(e) The target, not many arrows didn't hit. →
  (u) [*the* y: Ty](¬[*many* x: Ax]¬(Hxy))
(f) Many arrows hit the thing that wasn't a target. →
  (y) [*many* x: Ax]([*the* y: ¬Ty](Hxy))
(g) Many things that weren't arrows hit the target. →
  (v) [*many* x: ¬Ax]([*the* y: Ty](Hxy))
(h) The target was hit by many things that weren't arrows. →
  (r) [*the* y: Ty]([*many* x: ¬Ax](Hxy))
(j) The target wasn't **HIT** by many arrows [most of them missed]. →
  (t) [*the* y: Ty]([*many* x: Ax]¬(Hxy))

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13.9.1 Create a semantic description for (a) using the template
  provided in §9. (a) *Bert caught two fish, scaled them, gutted*
  *them, cooked them, and ate them*.

**Answer:** [b=Bert]([*two* y: y⊆[PL$_Q$ x: Fx]]**P**(Cby ∧
    [*the* z: z⊆[PL$_Q$ w: w=y]](Sbz ∧ Gbz ∧ Kbz ∧ Ebz)))
    →  Cby ≺ (Sbz ∧ Gbz) ≺ Kbz ∧ Ebz
    ▷  Sbz ≺ Gbz

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13.10.1 Create a semantics for (a–b).

(a) [☞ Those] are two cows.
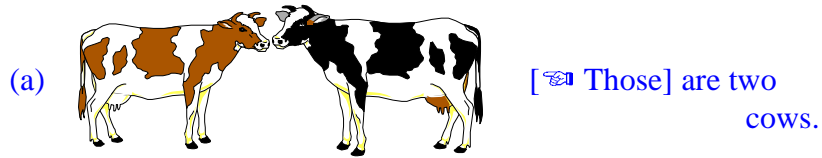
(b) Paolo was a happy man.

**Answers:** (a)

[*the* y: y⊆[PL$_Q$ x: $\lambda$u[**there**′(u) $\wedge$ **bovine**′(u) $\wedge$ $\wedge$ **adult**′(u) $\wedge$ **h o r n e d** ′ ( u ) $\wedge$ **u d d e r e d** ′ ( u ) $\wedge$ **female**′(u)](x)]](**N**(**be**′(y$_U$,[*two* w: w⊆[PL$_Q$ z: **cow**′(z)]]))) $\wedge$ y⊆w $\wedge$ |y|=2

(b) (i)   As an habitual characteristic:

[p=Paolo](**P**(**be**′(p,[*a* x: x⊆[∅$_Q$ y: $\lambda$z[**man**′(z) $\wedge$ **happy**′(z)](y)]])))

(ii) As a contingent fact:

**P**[**happen**′(∅)] CAUSE [BECOME [p=Paolo](**be**′(p,[*a* x: x⊆[∅$_Q$ y: $\lambda$z[**man**′(z) $\wedge$ **happy**′(z)](y)]]))]

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*The end*