Midterm 2017 (due Apr. 11, 2017)

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1 Introduction

Please answer the following questions. Throughout this exam, any text in square brackets and red font is an instruction from me, not part of the example.

2 Entailments, implicatures, presuppositions [36 pts]

In this section, each problem contains a pair of sentences. Let's call the first sentence S1 and the second, S2. For each pair of sentences:

2.1. Say whether the first S1 **entails** or **implicates** the second S2, or neither (Note entailment and implicature are mutually exclusive; S1 can't both entail and implicate sentence S2); if you say **neither**, then you need to describe some circumstances in which S1 is true and S2 is false; if you say S1 **implicates** S2, you need to show the implicature is cancellable;

2.2. Also say if S1 **presupposes** S2; if you claim S1 **presupposes** S2, you need to demonstrate that;

2.3. Also say if S1 and S2 are **logically equivalent**;

2.4. Also note if any of the sentence pairs are **contraries** or **contradictories**.

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Finally, discuss any **issues** that arose in formulating your answer. For example, (a) one or both of the sentences was ambiguous and you had to choose a reading, or (b) you had to make a specific assmuption about the exact meaning of a word in S1 or S2.

As an example, consider the pair of sentences:

(i.a) Fido is a mammal.
(i.b) Fido is a dog

The following is a complete correct answer. In the answer, I use $\Rightarrow$ to mean "entails", and I encourage you to do the same.

Fido is a mammal $\Rightarrow$ Fido is a dog	no

Suppose Fido is an elephant. Then we have:

Sentence	Truth value
Fido is a mammal	True
Fido is a dog	False

Therefore, *Fido is a mammal* does not entail *Fido is a dog*.

This answer is correct because (i.a) does not entail (i.b). It is complete because (i.a) does not implicate (i.b) nor presuppose it; nor is (i.a) logically equivalent with (i.b); nor are the two sentences contraries or contradictories. So we're done.

As another example, consider the pair of sentences:

(a) Some politicians are idiots.
(b) Not all politicians are idiots.

The following is a complete correct answer.

Some politicians are idiots   implicates   Not all politicians are idiots

This implicature can be cancelled.

Suppose Speaker S has said "Some politicians are idiots."

He can then say

In fact, now that I think about it, all politicans are idiots.

2

This successfully **cancels** the implicature that not all politicians are idiots. Therefore, *Some politicans are idiots* implicates, but does not entail *Not all politicians are idiots.*

2.1. (a) Rapunzel is a Methodist.

(b) Rapunzel is either a Presbyterian or a Methodist.

2.2. (a) Hermione is either a moose or a hamster.

(b) Hermione is a moose.

2.3. (a) A Communist who writes mystery novels busses tables at the country club.

(b) Reginald is a Communist who writes mystery novels and busses tables at the country club.

2.4. (a) Tanqueray is an expensive brand of gin.

(b) Tanqueray is a brand of gin.

2.5. (a) Reginald is a Communist who writes mystery novels and busses tables at the country club.

(b) A Communist who writes mystery novels busses tables at the country club.

2.6. (a) Julian will either accept a basketball scholarship from USC or write a letter to the athletic director.

(b) Julian will not accept a basketball scholarship from USC and write a letter to the athletic director

2.7. (a) No one gave candy to the shi tzu.

(b) Alice didn't give candy to the shi tzu.

2.8. (a) No sharks were harmed during the making of this film.

(b) No great white sharks were harmed during the making of this film.

2.9. (a) John F. Kennedy was elected President in the year 2000.

(b) John F. Kennedy was elected President.

2.10. (a) Ludwig quietly left the room.

    (b) Ludwig left the room.

2.11. (a) Rita is Pat's sister.

    (b) Pat is female.

2.12. (a) Not every politician is an idiot.

    (b) There is a politician who is not an idiot.

2.13. (a) Every Italian loves fairy tales

    (b) Every bald Italian loves fairy tales

2.14. (a) Every Italian loves fairy tales

    (b) Every Italian loves German fairy tales.

2.15. (a) Germany won World War II.

    (b) Germany fought in World War II.

2.16. (a) Lisa is tall.

    (b) Lisa is short.

2.17. (a) Someone is tall.

    (b) Someone is short.

2.18. (a) John loved his son.

    (b) John had a son.

3 Logic [20 pts]

Consider the truth table for $\sim (\sim p \,\&\, \sim q)$:

p	q	$\sim p$	$\sim q$	$(\sim p \,\&\, \sim q)$	$\sim (\sim p \,\&\, \sim q)$
T	T	F	F	F	T
T	F	F	T	F	T
F	T	T	F	F	T
F	F	T	T	T	F

Answer the questions below about the following expressions.

$$(a) \quad \sim (q \to p)$$
$$(b) \quad \sim p \to q$$
$$(c) \quad p \vee \sim q$$
$$(d) \quad p \vee q$$
$$(e) \quad \sim (p \vee q)$$
$$(f) \quad p \to (q \to p)$$
$$(g) \quad (p \to q) \to p$$
$$(h) \quad \sim (p \to (q \to p))$$

3.1. Which of the above expressions is logically exquivalent to $\sim (\sim p \,\&\, \sim q)$? Prove your answer by showing truth tables for all of the above expressions.

3.2. Point out any of these expressions that are tautologies or contradictions and explain why using the truth tables.

4 Translation [35 pts]

Translate the following sentences into predicate logic of the sort introduced in chapters 2 & 3 of our text. For any ambiguous sentences, give all the readings, and paraphrase them, saying which logical translation goes with which reading. Except where indicated otherwise, translate definite NPs and proper names using single letter constants. If you have an issue about how to translate a word, please **discuss** it and justify your decision, rather than just, say, ignoring the word and losing unnecessary points. If you feel that a word is being used inconsistently and you need to give it more than one translation (such as when you translate transitive and intransitive *eat* as EAT and EAT2), please explain why).

4.1. Rudolf studied neither history nor mathematics. [You may translate both *history* and *mathematics* as if they were proper names.]

4.2. Breanna and Letitia embraced.

4.3. Leland and James wrote to either John or Mary

4.4. Pete is an immortal porpoise.

4.5. Pete mailed every customer a small book of poems. [Give only the reading which would be true if every customer got a different book of poems].
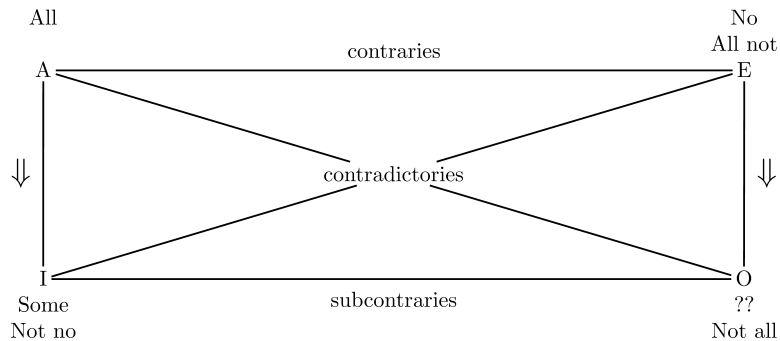
Figure 1: The Aristotelian Square

4.6. No problem was solved by every professor. [For this one, two readings are in principle possible because of a scope ambiguity. Write out both readings, and indicate which one of the two readings is impossible. Describe a situation in which that impossible reading would be true.]

4.7. Jack resembles no one I know.

4.8. The tutor was angry at every pupil.

4.9. Meghan and Prince Harry are engaged. [You may treat *Meghan* and *Prince Harry* as proper names. There are two readings. Paraphrase the two readings. Give translations of both. Say which translation goes with which reading. Finally (you may have to Google this): Is either reading known to be true?]

4.10. Some taxi driver from Ukiah punched Spike. [You may treat *taxi driver* as one word and *Ukiah* and *Spike* as proper names.]

5   interesting surprise problem [9 pts]

Using the Aristotelian square pictured in Figure 1, and the theory of scalar implicature, explain why **no language** should have a single word meaning *not all*. You may assume that *some*, *all* and *no* are all words.