Midterm Model Answer 2017

Jean Mark Gawron
SDSU*

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1 Introduction

2 Entailments, implicatures, presuppositions [36 pts]

2.1. Entailment.

(a) Rapunzel is a Methodist.

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

> No demonstration is required in your answer but to help you think about entailments, you can suppose the second sentence is **false**, and ask if the first sentence can be true in those circumstances. If it can't, then the first sentence entails the second. So in this case, suppose we assume the first sentence is false: that is, Rapunzel is **neither** a Presbyterian **nor** a Methodist. Then can it be true that Rapunzel is a Methodist? Nuh uh! It cannot.

2.2. No entailment, demonstration required.

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

(b) Hermione is a moose.

*San Diego State University, Department of Linguistics and Oriental Languages, SHW 238, 5500 Campanile Drive, San Diego, CA 92182-7717, gawron@mail.sdsu.edu.

Demonstration of no entailment:

> Suppose Hermione is a hamster. Then (a) is true and (b) is false. So (a) does **not** entail (b).

2.3. No entailment, demonstration required. Nothing else.

(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.

> Suppose that Alicia is a communist who writes mystery novels and busses tables at the country club. And suppose Reginald is a young Republican who writes science fiction and drives a taxi. Then (a) is true and (b) is false. So (a) does not entail (b).

2.4. Entailment, nothing else. Presup claim accepted if defended.

(a) Tanqueray is an expensive brand of gin.

(b) Tanqueray is a brand of gin.

> Consider (a'): *Tanqueray is not an expensive brand of gin.* It is possible to say (a') in such a way that it entails (b), particularly by placing focus or intonational emphasis on *expensive*: Tanqueray is not an EXPENSIVE brand of gin In that case we can argue (a) presupposes (b), since both (a) and (a') entail (b) But this is controversial, because one can argue that (a'), pronounced with this focus, is not the contradiction of (a). But that's a long story.

2.5. Entailment, nothing else.

(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. Implicature, cancellability demonstration required.

(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

Cancellation demonstration:

> Julian will either accept a basketball scholarship from USC or write a letter to the athletic director. In fact, he will do both.

This discourse is not contradictory.

Notice the cancellation demonstration involves seeing whether the above discourse is coherent, non-contradictory. Many of you just said, "He can do both." But this is a semantics class, not a class about what is physically or emotionally possible. The cancellation is **a sentence**, and the test is to place it **right after** (a) and then to ask whether a speaker who has said both those things in quick succession has contradicted herself.

2.7. Entailment, nothing else.

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

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

2.8. Entailment, nothing else

(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. Entailment, nothing else

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

(b) John F. Kennedy was elected President.

2.10. Entailment, nothing else, Presup claim accepted if defended.

(a) Ludwig quietly left the room.

(b) Ludwig left the room.

Presupposition claim:

Consider (a’) *Ludwig did not quietly leave the room.* This is not a graceful sentence, but to the extent it is acceotable, it may only to be appropriate when *Ludwig left the room* is true. In that case, we have an argument that (a) presupposes (b). But this too is controversial.

2.11. Not an entailment, correct demo required.

(a) Rita is Pat’s sister.

(b) Pat is female.

Suppose Pat is Rita’s brother. Then (a) is true and (b) is false, so (a) does not entail (b). Note it wasn’t enough to say Pat is male. That is not enough to make (a) true. You needed to describe a situation in which Pat is male and Rita’s sibling, that is, Pat is Rita’s brother. Then (a) has to be true, (b) has to be false.

2.12. Logically equivalent

(a) Not every politician is an idiot.

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

(a) entails (b) and (b) entails (a).

2.13. Entailment

(a) Every Italian loves fairy tales

(b) Every bald Italian loves fairy tales

2.14. Not an entailment

(a) Every Italian loves fairy tales

(b) Every Italian loves German fairy tales.

Suppose every Italian on the face of the earth (including Umberto Eco, famous Italian semiotician) loves *The Fables of La Fontaine*, generally agreed to be fairy tales. But suppose Umberto Eco hates all the fairy tales of Grimm, which are German. Then (a) is true and (b) is false.

2.15. Presupposition. First (a) entails (b)

(a) Germany won World War II.

(b) Germany fought in World War II.

Consider (a'): *Germany didn't win World War II.* This entails *Germany fought in World War II.* So both (a) and its negation entail (b), so (a) presupposes (b). Note the only way to demonstrate presupposition was to consider whether the negation of (a) also entails (b). If you didn't do that, you didn't get credit.

Note also: Many of you got distracted by the fact that (a) is false. That has nothing to do with the question. You have to consider whether (a) entails (b). To do that, you need to consider situations in which (a) is true, hypothetical situations, in this case; but we've been considering hypothetical situations all along. You didn't think Rapunzel was **really** a Methodist, did you?. In fact, she's a Buddhist. But that doesn't change the answer to question 2.1

2.16. No entailment, Contraries

(a) Lisa is tall.

(b) Lisa is short.

(a) and (b) can't both be true at the same time. They are **contraries**.

2.17. No entailment, Not even contraries,

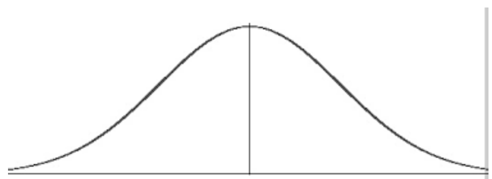
(a) Someone is tall.

(b) Someone is short.

Suppose Bill is tall, and Thumbelina is short. Then (a) and (b) are both true, and there is no contradiction. These are not contraries.

Many of you reported correctly that these weren't contraries, but then went on to claim there was an implicature relation, or even an entailment relation, between (a) and (b). The idea was something like, how can you (meaningfully?) say someone is tall unless it is also true that someone else is short? This idea is wrong.

You had in mind that the adjective *tall* requires something like a bell curve:



That is, there are people at the tall end, people at the short end, and that all this structure is necessary in order to meaningfully classify someone as tall. Yes, this is how it works in a statistics course. But this is not how language works.

Suppose a plague wipes out everyone under 5'10". Perhaps standards of height would eventually readjust themselves, but for a time, at least, one could truthfully say, "There are no short people." This shows that there's no semantic requirement for a bell-shaped curve. There are just standards of tallness, and those who meet them are tall, and likewise for shortness. No implicature or entailment from (a) to (b).

2.18. First, (a) entails (b). Also, very clearly, presupposition, which requires a demonstration.

(a) John loved his son.

(b) John had a son.

To demonstrate that (a) presupposes (b), we need to consider (a') *John didn't love his son.* This entails (b) as well. Since both (a) and its negation (a') entail (b), (a) Presupposes (b).

3 Logic [20 pts]

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

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

b and d are equiv. f is a tautology. h is a contradiction.
This is shown by the truth tables below.

(a) Not equivalent

p	q	$q \to p$	$\sim(q \to p)$
T	T	T	F
T	F	T	F
F	T	F	T
F	F	T	F

(b) Equivalent

p	q	$\sim p$	$\sim p \to q$
T	T	F	T
T	F	F	T
F	T	T	T
F	F	T	F

(c) Not equivalent

p	q	$\sim q$	$p \vee \sim q$
T	T	F	T
T	F	T	T
F	T	F	F
F	F	T	T

(d) Equivalent

p	q	$p \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

(e) Not equivalent

p	q	$p \vee q$	$\sim (p \vee q)$
T	T	T	F
T	F	T	F
F	T	T	F
F	F	F	T

(f) Not equivalent, tautology

p	q	$q \to p$	$p \to (q \to p)$
T	T	T	T
T	F	T	T
F	T	F	T
F	F	T	T

(g) Not equivalent

p	q	$p \to q$	$(p \to q) \to p$
T	T	T	T
T	F	F	T
F	T	T	F
F	F	T	F

(h) Not equivalent, contradiction

p	q	$q \to p$	$p \to (q \to p)$	$\sim (p \to (q \to p))$
T	T	T	T	F
T	F	T	T	F
F	T	F	T	F
F	F	T	T	F

4 Translation [35 pts]

4.1. Rudolf studied neither history nor mathematics. [Two equivalent answers.]

(a) $\sim((\text{study}(\text{r, h}) \vee (\text{study}(\text{r, m}))$
(b) $\sim \text{study}(\text{r, h}) \,\&\, \sim \text{study}(\text{r, m})$

4.2. Breanna and Letitia embraced.

$$\text{embrace}(\text{b, l}) \,\&\, \text{embrace}(\text{l, b})$$

4.3. Leland and James wrote to either John or Mary

Either of the following readings got credit. It seems clear the first is preferred.

a $(\text{write-to}(\text{l, jn}) \vee \text{write-to}(\text{l, m})) \,\&\, (\text{write-to}(\text{jm, jn}) \vee \text{write-to}(\text{jm, m}))$
b $(\text{write-to}(\text{l, jn}) \,\&\, \text{write-to}(\text{jm, jn})) \vee (\text{write-to}(\text{l, m}) \,\&\, \text{write-to}(\text{jm, m}))$

4.4. Pete is an immortal porpoise.

$$\text{immortal}(\text{p}) \,\&\, \text{porpoise}(\text{p})$$

4.5. Pete mailed every customer a small book of poems.

$$\begin{aligned}&\forall x\, [\text{customer}(x) \rightarrow \\ &\quad \exists\, y\, [\text{book-of}(y,\ \text{poems}) \,\&\, \text{small}(y) \,\&\, \text{mail}(\text{p},\ x,\ y)]\,]\end{aligned}$$

4.6. No problem was solved by every professor.

(a) $\sim \exists x\, [\,\text{problem}(x) \,\&\, \forall y\, [\,\text{professor}(y) \rightarrow \text{solve}(y,\ x)\,]\,]$
(b) $\forall y\, [\,\text{professor}(y) \rightarrow \sim \exists x\, [\,\text{problem}(x) \,\&\, \text{solve}(y,\ x)\,]\,]$

These are the two readings you get if you treat this as a scopal ambiguity. This is because the translation of *no problem* is:

$$\sim \exists\, \text{problem}(x) \,\&\, \ldots$$

and the translation of *every professor* is:

$$\forall y\, \text{professor}(y) \rightarrow \ldots$$

and the translation of the main sentence with these two NPs extracted is :

$$\text{solve}(y,\ x).$$

Combining the NP translation with the main sentence translation in either order gets you readings (a) and (b).

Reading (b) is true in the following circumstances: Each of 3 professors is given a set of problems to solve, and none of the three professors solves a single problem. So reading (b) describes complete failure.

On the other hand, suppose the three professors are named Moe, Larry, and Curly. Consider a situation in which all 3 professors work on the same problems, and the solving relation looks like this:

Situation A
$$\left[\begin{tikzcd}[row sep=small] \mathrm{Moe} \arrow[r] \arrow[dr] & 1 \\ \mathrm{Larry} \arrow[r] \arrow[dr] & 2 \\ \mathrm{Curly} \arrow[r] \arrow[uur] & 3 \end{tikzcd}\right]$$

Moe solves problems 1 and 2, Larry solves 2 and 3, and Curly solves 1 and 3. No problem is easy enough for all the professors to solve. Reading (a) is true in this situation, because it says no problem was such that all the professors solved it, but reading (b) is false, because each professor has some success, and reading (b) says none of them has any success. The English sentence (4.6) is also true in this situation, so it appears to have reading (a) and not reading (b).

4.7. Jack resembles no one I know.

$$\sim \exists x[\text{ know(I, } x) \,\&\, \text{resemble(j, } x)\,]$$

4.8. The tutor was angry at every pupil.

$$\forall x[\text{pupil}(x) \rightarrow \text{angry-at(t, } x)\,]$$

4.9. Meghan and Prince Harry are engaged.

(a) $\text{engaged-to(ph, m)} \,\&\, \text{engaged-to(m, ph)}$
(b) $\exists x\,[\,\text{engaged-to(m, } x) \,\&\, \exists y\, \text{engaged-to(ph, } x)\,]$

Neither reading is true, because, at the moment (Google check), Prince Hal is engaged to no one; that's why he can safely be featured in so many stories in which he is out on a date with Meghan. Watch for consistent use of predicate *engaged-to* (both readings should use a 2-place predicate).

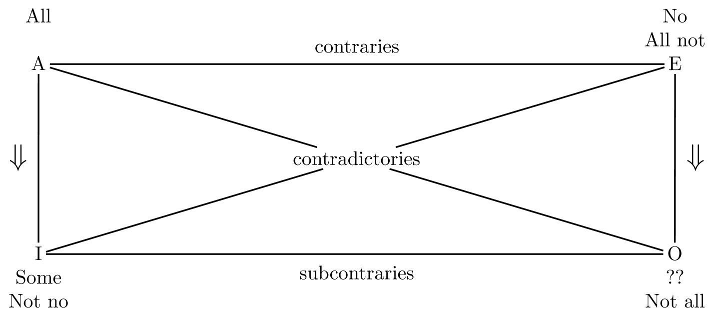


Figure 1: The Aristotelian Square

4.10. Some taxi driver from Ukiah punched Spike.

$$\exists x\,[\,\text{taxi-driver}(x)\,\&\,\text{from}(x, \text{u})\,\&\,\text{punch}(x, \text{s})\,]$$

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.

Following Larry Horn's 1984 discussion let's call the missing lexical item in the O corner of the square **nall**. Positioned at that corner, this word would mean *not all*, but *nall* isn't a word, and furthermore, in language after language, it seems there isn't a hypothetical word like *nall* meaning *not all*. The question is: Why?

Full credit answer: According to the theory of scalar implicature (or Quantity Implicature), *some* implicates *not all*. This is because *all* entails *some* (the arrow on the line connecting *all* and *some* in the diagram), so *all* is the **stronger** element on a scale. In general, in quantity implicatures, asserting the weaker element on a scale implicates the denial of the stronger element (*some* implicates *not all*). **But then there is no need for a word like *nall*, because what *nall* would mean can be communicated (by implicature) simply by saying *some*.**

Subtle follow on: What the theory of scalar implicature actually predicts is that *some* and *nall* shouldn't **both** be words. This is because the relationship of *no* and *nall* is exactly like the relationship of *all* and *some*. *No* and *not all* form a scale, because *no* entails *not all*; *no* is therefore the stronger element on the scale, and therefore, asserting *nall* would implicate the denial of *no*. Recall that

$$\text{no} = \sim \exists$$

Therefore, the denial of *no* is *some*:

$$\sim \text{no} = \sim\sim \exists = \exists = \text{some}$$

The conclusion is that *nall*, if it existed, would implicate *some*, just as *some* implicates *nall*. So, the theory of quantity implicature is actually neutral as to which should be a word. Whichever one became a word could be used to implicate the content of the other. To complete the explanation as to why *some* is always the one chosen, you also have to assume that *some* is cognitively or linguistically **simpler**, because it doesn't include the concept of negation.

References

Horn, Laurence. 1984. Toward a new taxonomy for pragmatic inference: Q-based and r-based implicature. *Meaning, form, and use in context: Linguistic applications* 11–42.