Mock Exam

Manfred Sailer

June 28, 2016

You have to reach more than 50% of the points to pass.

1 Predicate Logic

Task 1: Ambiguous sentences (7 points)
Consider the following ambiguous sentences:

(1) a. Duncan trusted Macbeth because he was a thane.
b. Every king trusts a thane.
c. Macbeth and Macduff are married.
d. Macbeth killed a king with a dagger.

1. For **each** of these, determine the type of ambiguity.
2. Pick **one** of the sentences provide an unambiguous paraphrase for the possible readings.

Task 2: Model and Interpretation (7 points)

1. Define a universe that consists of Macbeth and Banquo.
2. Define the interpretation of the names **macbeth** and **banquo** in an intuitively plausible way.
3. Define the interpretation of the properties **thane**, **king**, and **witch** is such a way that Macbeth is a king, both are thanes and neither is a witch.
4. Define the interpretation of the 2-place relations **mistrust** and **kill** in such a way that Macbeth and Banquo mistrust each other and Macbeth kills Banquo.

Task 3: Formulæ (7 points)
Write down logical formulæ that express the meaning of the following sentences.

1. Banquo is a thane.
2. Macbeth is king and Macbeth mistrusts Banquo.
3. If Banquo is king then Macbeth does not kill Banquo.

Task 4: Interpreting formulæ (8 points)
Compute the interpretation of the following formulæ step by step.

1. $\textbf{mistrust}(\textbf{macbeth}, \textbf{macbeth})$
2. $\neg\textbf{king}(\textbf{banquo})$
3. $\textbf{witch}(\textbf{banquo}) \supset \textbf{king}(\textbf{macbeth}))$

Task 5: Variables (2 points)
Provide a g-function that maps the variables x, y, and z to individuals from the universe and compute the interpretation of the following formula with respect to the model and your g.

(i) $\mathbf{kill}(z, x)$

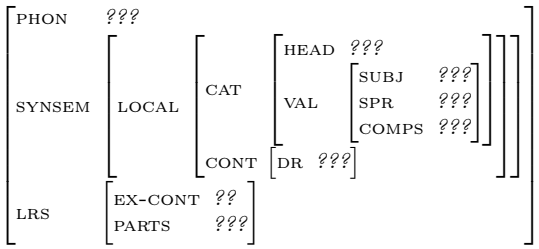
Task 6: Quantifiers
Provide logical formulæ that expresse the meaning of the following sentences. Are the formulæ true in **your** model (not in the entire play)? Give a short reason (you don't need to compute the truth value).

1. Banquo was killed by a king.
2. Macbeth mistrusts every witch.

2 Lexical Resource Semantics

Task 7: Analysis: Lexicon
Provide the lexical entries for the words in the sentence *Banquo mistrusted Macbeth.* Use the features as given in figure 1. You may work with the simplified AVM.

Normal AVM



Simplified AVM

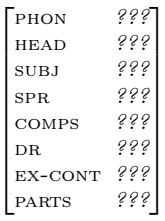


Figure 1: Features used in AVMs

Task 8: Analysis: Syntactic structure and semantic combinatorics (15 points)
Using the lexical entries from Task 7, provide the syntactic structure of the sentence *Banquo mistrusted Macbeth.* Indicate **all** the values for all features at each node in the tree.

Task 9: General mechanisms of LRS (12 points)

1. Enumerate all possible logical forms that would be compatible with the PARTS list of the sentence from Task 8.
2. Use the PARTS value from Task 8 to show that the following expressions are excluded as possible logical forms of the sentence.
   (a) $\mathbf{mistrust}(\mathbf{macbeth}, \mathbf{banquo}, \mathbf{banquo})$
   (b) $\mathbf{mistrust}(\mathbf{banquo}, \mathbf{banquo})$
   (c) $\mathbf{macbeth}(\mathbf{mistrust}, \mathbf{banquo})$
3. How do we manage to prevent some of the hypothetically possible logical forms that you listed in subtask 1 from occurring?

Task 10: Local semantic phenomena (3 points)
What kind of semantic restriction is violated in the deviating forms of the following sentences? Give a reason for your decision.

1. [Lady Macbeth's madness]/#[The crazy queen] started after Duncan's death.
2. Macbeth killed [the king]/?[his honourableness].

Task 11: Local semantics phenomena (8 points)
Consider the following data on the verb *build*. Provide a lexical entry that includes all features from figure 1 and encodes explicitly the linking information, the sortal restriction, and (some of) the further semantic selection restrictions. Describe how your lexical entry will be allow you to account for the data.

(2) a. Macbeth built a wall.
b. The Scots built a wall.
c. #Macbeth built a war.
d. ??Macbeth built Lady Macbeth.
e. ??The wall built a war.
f. #The war built a wall.