

Theoretical homework #5, TTTV 2017

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Exercise 1

- (a) After Bill made a coffee, Anne saw a shooting-star.

$$\exists x, y, t, t' (Makes(x) \wedge Agent(b, x) \wedge Goal(c, x) \wedge End(t, x) \\ \wedge Start(t', y) \wedge (t \prec t') \wedge (t' \prec U) \wedge Sees(y) \wedge Agent(a, y) \wedge Goal(s, y))$$

- (b) When Bill made a coffee, Anne had seen a shooting-star.

$$\exists x, y, t, t' (Makes(x) \wedge Agent(b, x) \wedge Goal(c, x) \wedge End(t, x) \\ \wedge Start(t', y) \wedge (t' \prec t) \wedge (t' \prec U) \wedge Sees(y) \wedge Agent(a, y) \wedge Goal(s, y))$$

Exercise 2

The arguments are 'agent' and 'theme.' Sentence examples that start with the agent are 'I drink water' and 'he writes poetry.'

The agent for 'drink' should be an animal. (Insects drink, but I don't know about
The theme for 'drink' should be a substance.

The agent for 'write' should be a person.

The theme for 'write' should be communication. (Poetry is not a hyponym of written communication.)

Exercise 3

- (a) 1. A small fragment of something broken off from the whole
2. Worthless material that is to be disposed of
3. A small piece of something that is left over after the rest has been used
4. The act of fighting; any contest or struggle

1,2 and 3 are polysemous senses of each other. Meaning they are semantically related. 4 is unrelated, and thus a homonym of the other three.

- (b) 1 is a part of a thing, 3 is a part on an object. I think that's enough similarity to classify them as polysemous.

Only 2 is classified as waste, some levels below matter. I've looked up the inherited hypernyms of 'lamb' (the example used in lecture), and they are as different as 3 is from 1 and 2. So I don't know if these chains can be used to successfully determine whether there is homonymy or polysemy.

1, 2 and 3 are physical entities, where 4 is abstract, which does appear consistent with the answer to (a).

1: part - thing -phys ent 2: matter - phys ent 3. part - ob - phys 3: abstraction

Exercise 4

Time flies like an arrow

Signature words: time, flies, arrow

Glosses used:

Time (t)

1. an instance or single occasion for some event
2. the continuum of experience in which events pass from the future through the present to the past
3. a reading of a point in time as given by a clock

flies (f)

1. travel through the air; be airborne
2. pass away rapidly
3. move quickly or suddenly

arrow (a)

1. a mark to indicate a direction or relation
2. a projectile with a straight thin shaft and an arrowhead on one end and stabilizing vanes on the other; intended to be shot from a bow

Disambiguate

Time

With flies

- t_1 and $f_1 = 0$
- t_1 and $f_2 = 0$
- t_1 and $f_3 = 0$
- t_2 and $f_1 = 0$
- t_2 and $f_2 = 1$, pass
- t_2 and $f_3 = 0$
- t_3 and $f_1 = 0$
- t_3 and $f_2 = 0$
- t_3 and $f_3 = 0$

With arrow

- t_1 and $a_1 = 0$
- t_1 and $a_2 = 0$
- t_2 and $a_1 = 0$
- t_2 and $a_2 = 0$
- t_3 and $a_1 = 0$
- t_3 and $a_2 = 0$

flies

With time

- t_2 and $f_1 = 0$
- t_2 and $f_2 = 1$, pass
- t_2 and $f_3 = 0$

With arrow

- f_1 and $a_1 = 0$
- f_1 and $a_2 = 0$
- f_2 and $a_1 = 0$
- f_2 and $a_2 = 0$
- f_3 and $a_1 = 0$
- f_3 and $a_2 = 0$

arrow

None, see above.

Conclusion:

Time(2): the continuum of experience in which events pass from the future through the present to the past

Flies(2): pass away rapidly

Arrow: unknown

The algorithm returns the correct senses for the words time and flies (based on WordNet). The correct sense of the word arrow could not be found, because none of the words from the two possible senses matched with any of the (correct) senses of the words time and flies.