

Reread Tolman (1948) - Cognitive maps in rats and men, and answer the below questions (succinctly please):

1. (20 points) What are the principle differences between the R-O theory of instrumental conditioning and Tolman's cognitive theory?
2. (10 points) Describe two types (extremes) of cognitive maps. What is the main difference between them, and under what circumstances is each type learned?
3. (Bonus - 10 points) Can you relate the above dichotomy to the S-R vs. R-O dichotomy?
4. (10 points) What was Lippitt & Spence's experimental finding and why is it special and surprising? Do S-R or R-O theories predict this finding? To which paradigm in Pavlovian conditioning is this phenomenon of latent learning related?
5. (15 points) Why, in Tolman's view, do rats show more VTE in tasks with doors that are easier to discriminate in the Lashley apparatus (now called a "Lashley Stand"), compared to tasks in which the doors are more similar to each other? How does he explain the fact that in mazes the results are the opposite: more VTE in hard choices compared to easy ones?
6. (15 points) What is the conclusion that Tolman draws from the 'searching for the stimulus' and 'hypothesis' experiments, and how are these two experimental paradigms similar?
7. (10 points) What type(s) of learning can explain why a significant proportion of the rats in the first 'spatial orientation' experiment that Tolman describes chose arm #1, and why in the second experiment of this type many chose arms #1 or #10?
8. (20 points) In his paper Tolman does not describe precisely what type of information would be stored/included in a cognitive map. From your reading of the paper, try to hypothesize what information a map of this type should include? According to the different experiments described, what information does the map hold? Do you think there is some relationship between these maps and the 'tree' structure we discussed in model-based reinforcement learning? (and if yes, what is it?)