

April Fools!

with thanks to Raymond Smullyan, *What is the Name of This Book?*

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Joshua Zucker, joshua.zucker@stanfordalumni.org

Be prepared for the great April Fools prank that I am going to play on you during this talk!

Bets you can't lose

1. A man has committed a horrible crime and is sentenced to death. He is permitted to make one final statement. If it is a true statement, he is to be drowned; if it is false, he is to be hanged. What statement should he make?
2. Raymond Smullyan famously offered to make a statement, and to pay you a dollar if the statement is true, and pay you a quarter if the statement is false. Should you take the bet? If you do take the bet, what statement will he make?
3. The ancient Greek law teacher Protagoras took a poor but talented law student and agreed to teach him without a fee, on condition that after the student completed his studies and won his first law case, he would pay Protagoras. The student agreed, but after completing his studies did not take any cases. Some time elapsed and Protagoras sued the student. Who should win, and who should pay?

Lying counts

4. Raymond Smullyan once filled out a job application as a salesman. One of the questions was "Do you object to telling a little lie every now and again?" He did object, especially to salesmen who lie about their products, but decided that he'd be more likely to get the job if he said "No", so indeed that's what he wrote. Was it a lie?
5. Bertrand Russell described the philosopher G.E. Moore as one of the most truthful people he had ever met. He once asked Moore, "Have you ever lied?" and Moore replied "Yes". In describing this incident, Russell wrote "I think this is the only lie Moore ever told!"
6. How many errors are there in the following sentence:
This sentence has three errors.

Genies and surprise quizzes

7. As a textbook author, I believe every statement I made in the book I wrote. But, having seen many textbooks, I believe every textbook contains at least one error. Is this a contradiction?
8. You can buy a genie in a bottle that will grant a wonderful wish for you, provided that within 24 hours you sell the genie for less than you paid for it (an integer number of cents). If you fail to sell the genie, your wish is cancelled and you die. How much would you pay for the genie?
9. A teacher announces there will be a surprise quiz on exactly one of the five days next week. Is that possible?
<http://plato.stanford.edu/entries/epistemic-paradoxes> has some good reading.

Clubs

10. On an island, everyone is a member of zero or more clubs; each club is named after a different inhabitant; everyone has a club named after them. “Sociable” people are members of the clubs named after them, and “unsociable” people are not. What do you think about the “unsociable people's club”?
11. On another island, some people are secretly members of clubs, instead of openly. “Suspicious” people are not openly members of the club named after themselves (so they may be secretly members, or not members at all). “Spies” are known to be secretly members of the club named after them. What do you think about the “suspicious people's club”? What is the minimum possible number of spies?
12. In the Universe, there are infinitely many people who have formed clubs. Every possible set of people is a club. Is it possible to name every club after a different person? (Obviously it would be impossible if there were finitely many people.)