

The Exam Paradox (?)

Craig Fox

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1 The Situation, Part I

Let us assume that I make the following proposal to the class: “The syllabus indicates that you have to write all of these papers (and that you need to be here and participate) in order to get a good grade in this course. That’s all for show. How I’m *really* going to determine your grades is going to be much easier (for me). At some point, in the next four weeks, I am going to give you a surprise examination. Your grade on that examination will be your grade for this course. After the examination occurs, we can all stop showing up here.”

I went on: “Now, I’m not going to tell you what’s going to be covered on this exam. And, I’m not going to tell you when it’s going to be given. It *will* be some time in the next four weeks, and because I’d like to have some fun, *I will make sure that when the exam is actually given will come as a surprise to each of you.* (That way nobody can go home and think, ‘OK, now I need to study because I know the exam has to be next week.’ You see, my real problem is that the grades I’ve given out over the last several years have been too high; I need to lower my average. I’m sure you understand.)”

2 The Analysis

It’s reasonable to conclude that you are all outraged. (“How can he do this to us—isn’t he breaking some sort of rule?” “I’m going to drop this class right now.”) One take-charge type personality emerges from your ranks, and assumes the role of leader. She says, “Look here, nobody would do this sort of thing to us—this guy seems to nice, anyway. There must be something

else going on here. Maybe *this* is some sort of test. Let's think about this proposed 'examination.' We know that it has to occur in the next four weeks, and we know that we're not supposed to know when it's going to happen. So look!—" (she was on the verge of a discovery now, vigorously pointing) "—so, it *can't* happen in the last week, right? Because if three weeks have gone by and we haven't had the exam, *then we'd know* it had to be in the last week. And that would violate the fact that 'we're not supposed to know when it's going to happen.' So it has to be in the first three weeks. But then we can make the same argument about the third week. Since we know it can't be in the fourth week already, then if after two weeks the exam hasn't happened, then we'd know it had to be in that third week. So it can't be in the third week either! You see where this leads? There can't be any exam! We were supposed to figure out that there couldn't be such an exam."

3 The Situation, Part II

Consistent with my pronouncement, I say nothing about the exam. Consistent with your conclusion, you come to class believing that no exam will occur.

In the third week of class, everyone arrives and is greeted by the promised exam. Everyone fails it, so everyone fails the course, and the overall average of the grades I've given out lowers a bit.

4 Your Analysis

Provide your own analysis of this scenario. Some questions you might want to consider:

- (i) Is there anything wrong with the definition of the exam?
- (ii) Is there anything wrong with the student's argument?
- (iii) Did I lie to the students?

5 References

- O'Connor, D. J. "Pragmatic Paradoxes" in *Mind*. Vol. 57, Num. 227 (1948).
- Quine, W. V. O. "On a Supposed Antinomy" in *The Ways of Paradox*. Cambridge and London: Harvard, 1966, 1976.