Department of Mathematics

Colloquium

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How many paradoxes are there? (A mathematical logician's approach to philosophy)

Abstract: For millennia, philosophers have struggled with the notion of paradox. The canonical example is the so-called liar paradox ``This statement is false''. There are many other classic examples, but they all seem to rely upon some form of self-reference. In 1993, Stephen Yablo published a supposed non-circular paradox. It requires infinitely many statements, no one of which refers to itself. In 1997, Graham Priest argued that Yablo's paradox could be seen as an instance of a fixed-point construction and as a result of this, the list is basically circular. Others argue that, though it can be seen as a fixed-point construction, that cannot be held to blame for the paradox. Much philosophical discussion ensued, which I am still learning about and trying to understand.

Quite recently, Michal Walicki posted a paper to arxiv titled ``There are only two paradoxes''. This paper uses a graph theoretic approach (the connections between graph theory and paradoxes has been widely investigated by philosophers) hinting towards the idea that there are only two paradoxes: the liar and Yablo's paradox (up to some notion of equivalence of paradoxes).

I will present a different approach, based on ideas from mathematical logic, to show that the collection of paradoxes is quite complex. One major tool of mathematical logic is in measuring complexity of various mathematical problems. In particular, we show that there are continuum many paradoxes, and most of these are non-circular. In fact they are not related to a fixed-point. We further believe that, even up to the nebulous notion of equivalence of paradoxes, we have still found continuum many non-equivalent paradoxes.

Work joint with Luca San Mauro.

Wednesday December 13, 2023
3:15 – 4:15 PM
LO 1328 and via Zoom meeting

Request link from daniel.katz@csun.edu