History of Mathematics Section

14:00-14:45 Talk 1

Note of the Concept of Fairness

Meir Buzaglo
The Hebrew University of Jerusalem

Abstract

A man left an estate of 200 dollars to three creditors. He owed the first creditor 100 dollars, the second 200 dollars, and the third 300 dollars. How should the estate be divided? Aristotle suggested dividing it according to the proportions of the debts. However, the Talmud proposed a much more enigmatic method of division. Nobel laureate Professor Israel Aumann showed how this division, which had puzzled scholars for centuries, can be resolved using game theory. During his discussion, Aumann proposed a fundamental principle: if a division is fair between any two creditors, then it is fair overall. In this talk, I will present the problem and Aumann's proposed solution, but I will also raise objections to this principle. The result is an interdisciplinary exchange that benefits all participants.

14:55-15:40 Talk 2

Cultural complementarity inside and between mathematics and physics

Igal Galili
The Hebrew University of Jerusalem

Abstract

There are multiple ways to codify knowledge. Historically, two basic ways emerged consolidating since the science and mathematics in Classical Greece. They are analytical/numerical and geometrical/imagining. In constructing curricula for teaching mathematics and physics at schools, the requirement is to address both ways. This is for several reasons to be recognized and analyzed. In my talk, I will exemplify this situation with a few representative examples within teaching mathematics and within teaching physics using mathematics. In this regard, I will mention the debate between leading mathematicians and its implication to teaching elementary mathematics. I will also mention the hypothetical cognitive background of this debate. Yet, whether or not this theory is correct, the importance of complementary curriculum in this respect matches the well-known and widely observed existence of the pertinent cognitive preferences among scientists as well as among regular students, extremely important including the public schools which seek to address the widest population in a meaningful way – a top democratic value. Among the implications of this review is the call for recovery of the spatial geometry/stereometry in school teaching and geometry in general as the best paradigmatic case of a scientific theory currently studied in school mathematics.

15:40-16:00 Coffee break

16:00-16:45 Talk 3

Game theory - between mathematics and psychology

Haim Shapira

College of Management Academic Studies and Bar-Ilan University

Abstract

Normative and positive approaches to John Maynard Keynes "Beauty Contest" game. The Chinese Vase thought experiment-Nash Equilibrium and the conflict between mathematics and psychology.

16:55-17:40 Talk 4

Archimedes's stomach – a puzzle you'll love to digest

Yossi Elran

Davidson Institute of Science Education, Weizmann Institute and Western Galilee College

Abstract

The Ostomachion puzzle, attributed to the ancient Greek mathematician Archimedes, is considered one of the oldest known mathematical puzzles. In this talk, we will explore the historical context of the Ostomachion, its connections to Archimedes, and its journey through time. The puzzle, which involves rearranging fourteen geometric pieces to form a square, was discussed in Archimedes' lost treatise, later rediscovered in the Archimedes Palimpsest. We will examine how the Ostomachion has been interpreted, its cultural significance, and the mathematical challenges it poses. Additionally, we will discuss the impact of modern mathematical analysis, including the work of researchers who determined the number of possible solutions. Finally, we will consider the puzzle's influence on later mathematical studies and its role in the broader history of mathematical puzzles.