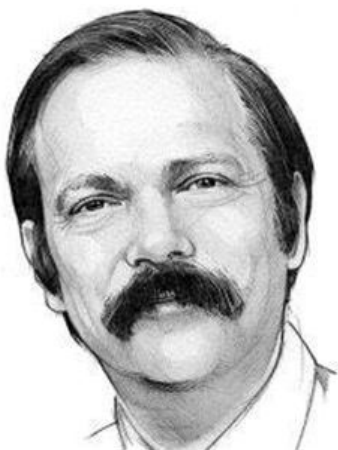At 7:00pm President Sara Lowman welcomed the membership and invited the members to the 678th meeting of the society and encouraged them to enjoy dinner.

At 7:45pm President Lowman called the meeting to order reminded members the April meeting will be early on 07 APR 2016 at Cohen House. Guest introductions were made around the tables.

At 7:50pm a ten minute break was announced.

At 8:00pm President Sara Lowman introduced the speaker and topic: "Humans, Machines and the Future of Work." by Moshe Vardi. Mr. Vardi is the George Distinguished Service Professor in Computational Engineering and Director of the Ken Kennedy Institute for Information Technology Institute at Rice University.

Mr. Vardi began by noting that there are two kinds of people: the protected and the unprotected. The protected make policy and the unprotected live in the world created by the policy. This creates a group in society which wants to buck the system, since the system as designed by policy doesn't help their situation in life. This is the background from which he views the current trends, from financial to social, that he outlined. From the basis of the current trends he projected the future machine/human relationship.

The first part of the lecture was a series of slides that summed up several current trends. Among them were the following.

The Great Recession, which took seven years to recover from. This set the context for the history of the Great Coupling of GDP and median household income levels from 1953 to 1983 and the Great Uncoupling that came about after that and increased after the Great Recession. Since 1983 a rising tide does not raise all boats.

Mr. Vardi then asked the question: Does technology have a role to play in this 'uncoupling'. He discussed Neo-Luddites and the question: Can innovation and progress hurt large numbers of people? Or does innovation and progress change the kind of jobs, not the number of jobs?

Artificial Intelligence moves the discussion from repetitive physical labor to repetitive intellectual labor. Alan Turing in the 1950's introduced the challenge for machine logic: If you can't tell from the responses, if an interlocutor is human or machine, then we can say the machine has Artificial Intelligence (AI). There are researchers on both sides of the argument about whether we are already nearly there, or whether we will not get there.

In 1997 an AI machine, Deep Blue, beat chess master Kasparov.

In 2007 autonomous vehicles drove 131 in test runs in urban areas

In 2011 IBM's Watson beat two world champions in Jeapardy

In 2016 Google's Deep Mind beat a world champion in the game of Go.

AI is progressing, and Turing's analysis is still compelling.

Robots are coming, especially in the years since 2011, repetitive physical tasks have been mechanized by robots, but thinking machines are not available, yet. The Great Recession has been used by companies to introduce robots as possible into factory production rather than hire back blue collar workers. This is a recent force that contributed to the continuing Great Uncoupling of Wealth and Wages in the United States since the 1980's. There is an argument that automation is taking over mainly low income jobs in the last 35 years. Automation has allowed corporate income to increase while reducing the level of employment.

Not only has employment been reduced by automation, even college educated workers have seen their income stagnate since the 1990's. So education as a way of getting ahead has not been as true as before 1990. Thomas Pickety has quantified the inequality of wealth created by the recent economy and shows that inequality of wealth has reached heights not seen in the developed world since before WWI. During recoveries, usually the bottom 90% get income gains, but this is no longer as true as before. Thus the middle class, which has been understood as the mainstay of a democratic society is shrinking. Labor force participation has also decreased from 82% in 1990 to 75% in 2010. Long term unemployment is also rising.

These are the current trends that Mr. Vardi used to set the context for the question: Is automation taking over jobs? The answer is, yes, currently it is taking over medium income repetitive physical jobs. Low income menial repetitive jobs are too low paying to automate. Non-repetitive jobs are not being automated. This is having an effect on society, especially among whites in the US society. Their mortality rate is increasing, with a noticeable cause being suicide.

The next question is whether smart machines and information technology will have a similar effect on other median wage jobs. The research community is unsure: 43% of respondents think it will or has, 30% are uncertain, and 28 % disagree that AI is moving into the job market. AI will be taking over jobs, but not those that rely on psychological insights and those requiring human interaction. Many AI researchers feel that we are at or close to the tipping point on this change. The economic argument that downscale jobs will be reduced, but upscale jobs will be increased may be true, but will the quantities balance out?

If the quantities do not equal out, then what will humans do? Will we move to a full leisure society with guaranteed incomes from the government? Can current economics work with a 50% labor participation or a 25% labor participation? If Turing's intelligent machines begin to compete with humans? What are the consequences? Currently Mr. Vardi asserts cheap energy is our robot, doing many tasks, but causing global warming? Can an all robot work force be sustainable? What happens if there is no middle class? If the past saw a movement from farm to factory, what happens when work moves from factory to robot? Mr. Vardi advocates that the time for thinking about that is now.