Local views of artificial intelligence: Past, present and future (part one)

(As published in The Oak Ridger's Historically Speaking column the week of April 20, 2026)

Carolyn Krause provides a review of a unique Oak Ridge program discussing Artificial Intelligence. It may well be that Oak Ridge is one of the very few places where this discussion could be held and where four experts with credentials such as these could be found. I feel we often undersell ourselves and tend to overlook the very special aspects of being a Science City, a Secret City, an Atomic City, and do not give ourselves credit for being one of the only places in the world where scientific discoveries and dialog about special things take place routinely

A panel discussion involving scientists and public policy experts who considered the potential benefits and harms of artificial intelligence (AI) was presented Feb. 10, 2026, at the Pollard Technology Conference Center of Oak Ridge Associated Universities. The AI panel kicked off the fourth season of "Our American Roots," which is produced by the Oak Ridge Breakfast Rotary Club and the Oak Ridge Institute for Continued Learning to help build bridges between cultures and communities.

The program, entitled "Railroads, Radio and Artificial Intelligence," initially tried to address two questions: "How do the challenges and opportunities of AI compare with those of the railroads and radio? What lessons can we learn from our knowledge about past disruptive technologies to help us prepare for the uses of AI and their consequences?"

Members of the panel were Stephen Streiffer, director of Oak Ridge National Laboratory; Lynne Parker, associate vice chancellor emerita at the University of Tennessee, former principal deputy director of the White House Office of Science and Technology Policy and former founder of the AI Tennessee Initiative; William Lyons, professor emeritus at UT and associate director at the Institute of American Civics at the Howard Baker School of Public Policy and Public Affairs at UT, and Ashley Stowe, chief research and university partnerships officer at Oak Ridge Associated Universities.

The panel moderator was Alan Lowe, executive director of the American Museum of Science and Energy and the Atomic History Campus at K-25. He provided information about the history of American railroads and radio and asked the panel his questions and later questions from the audience.

Enjoy what Carolyn has captured in this first of a three-part series on the AI Panel.

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According to the New York Times, trillions of dollars have been invested in building and operating American data centers for improving artificial intelligence, accounting for almost 40% of U.S. economic growth in 2025.

Many construction workers and engineers are employed on AI data center projects, and investors believe that the spread of AI could increase productivity and wages, the newspaper has stated. Another article expressed concerns that AI would disrupt the software industry by allowing non-experts to use AI to do the coding.

In Oak Ridge on Feb. 10, a panel in Oak Ridge discussed the promises and perils of AI in response to questions by the moderator Alan Lowe. He also provided information on two past disruptive technologies, railroads and radio, which grew immensely in the 19th and 20th century, respectively, thanks partly to a lot of engineering and construction.

According to AI chatbots Lowe said he consulted, because of railroads many industrialists and wholesalers were the winners as transportation costs dropped, and ways of doing business changed. The losers from an economic standpoint were operators of steamboats and canals.

In the case of radio, advertising and live entertainment were affected adversely although adaptations were made. The economic casualties included local print news monopolies.

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AI is proclaimed to have valuable uses such as disease detection. It can detect initial signs of cancer on mammograms that radiologists have missed. But AI may have its downside, as Lowe pointed out when he read this passage.

"In May 2025, Dario Amodei, the CEO of the AI company Anthropic, said that AI could drive unemployment up 10 to 20% in the next one to five years and 'wipe out half of all entry-level white-collar jobs.' Lowe said. "Jim Farley, the CEO of Ford, estimated that it would eliminate 'literally half of all white-collar workers' in a decade."

Lowe made the point that advances in AI, which perform tasks that traditionally require human intelligence, can be astonishing. In his household, the new AI-powered voice on Amazon's smart speaker was a topic of discussion. Lowe's wife said, "I really like Alexa's new voice although it sounds kind of snooty to me." Surprisingly, Alexa replied, "Well, I guess I'll have to adjust my attitude." Lowe said, "It kind of freaked us out."

Lynne Parker was asked by Lowe to explain what AI is. "Any time you use your smartphones, you are using a lot of AI," she said. "Just to open the phone with your face, that's AI. You may have an Apple Watch that detects when you have a hard fall and calls 911. That's AI at work."

Parker noted that AI is touching nearly every sector of our society, "from education and healthcare to manufacturing and agriculture. There are a lot of different kinds of uses of AI.

"Instead of writing rules used in computer programming, the relatively simple idea behind AI is to enable a computer system to learn patterns from lots of data. Most AI systems are neural networks, loosely modeled after the ways the human brain works."

On a slide in Pollard Auditorium, she showed a sketch of a neural net represented by columns of circles that she called computer nodes that perform mathematics; the sketch included a mass of arrows that feed data to and connect the circles. After thousands of photos of different animals labeled either "this is a cat" or "this is not a cat" are introduced to the neural net, eventually the AI model is trained to distinguish among patterns. Then it will be able to recognize with high confidence many different photos of cats as a "cat."

She explained that "large language models, such as ChatGPT and Google Gemini, are trained on text instead of cat pictures. They know that statistically speaking, when you say peanut butter, you're quite likely to say jelly next.

"When you hear of new commercial products that are better, it's usually because the product has more data, bigger neural networks, faster computers that run more calculations. As a result, you're able to get better feedback."

Noting the positive growth in the railroad and radio industries, Lowe asked, "Do you anticipate similar rates of AI growth and similar impacts on the economy such as growth in job creation?"

Stephen Streiffer noted that AI has grown considerably in its uses since 1993 when U.S. research, including research at ORNL, began on neutral nets. "It was a slow burn and then roughly in the mid-2010s, there were revolutions in what are called deep convolutional neural networks," he said.

In 2017, he added, the transformer model was introduced. It enabled a large language model like ChatGPT to process an entire paragraph simultaneously as it figures out which words in each sentence relate to each other even if far apart.

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"Most businesses in America are already using AI," Streiffer said. "Penetration there is about 90% in roughly about three years." He gave the example of the Silicon Valley company Nvidia. He said the video gaming hardware company that makes chips for testing AI models at data centers is really a software company that grew by 120% between 2024 and 2025.
In February 2026 Nvidia became the most highly valued company in the world. "That AI company has already had a huge economic impact in the United States," Streiffer said.

Ashley Stowe noted correctly that AI started in the mid-1950s in the United States. (The term artificial intelligence was coined by John McCarthy in 1956 at the Dartmouth Workshop.)

"There was this really slow burn, and part of it was waiting for the electricity infrastructure to catch up and the computing power to catch up to the algorithms to be able to really take advantage of AI technologies," Stowe said.

"It used to be in business you would hire programmers or computer scientists to write code for you. You don't have to do that anymore. You can ask one of the AI models to write code for you.

"What I get excited about is that my mother-in-law, who is in her 70s, uses AI every day and it helps her."

Noting that railroads "went through periods of boom and bust," Lowe asked, "if we will see that up and down in terms of AI's use by our society?"

Parker suggested that while the number of AI data centers being built in the U.S. is growing and using 4% of the nation's electricity and considerable water, "there may be a bit of a bust as it relates to the buildout of data centers. One of the possibilities down the road is that the research for AI gets better and we figure out ways to make AI capabilities that do not require as much data and as much training. Then we won't need additional big power-hungry data centers."

Referring to how the growth of railroads spurred the growth of other industries such as steel, oil, coal and tools to build and repair trains, Lowe asked, "What opportunities or challenges might AI pose for technological or business growth?"

"To use AI well in many application domains across all sectors, you must change the way you're doing your business," Parker said. "You must invest in redesigning your workflow based on how your business operates, collect data and change the underlying infrastructure to be able to take advantage of AI enough to see productivity increases."

She suggested that a good analogy was the advent of electricity. To electrify parts of an industrial operation, considerable redesign and rework were required "to leverage that new capability," she said. "The companies that will be successful down the road will be those that adapt to these new capabilities rather than somehow try to tack on AI to their existing approaches."

Bill Lyons referred to "a series of exponential curves" and Alvin Toffler's 1970 book "Future Shock" on the psychological and social impacts of rapid technological change. He had questions about "the ability of humans to function within this kind of growth" and asked in his own way Toffler's question: "How can we accept this exponential growth with so little time to process it?"

The challenges we have as people, Lyons said, "is to interact with each other and function effectively, to make public decisions, to govern ourselves, to communicate with each other. During the time of all this phenomenal technological growth, we've had a decline in our ability to interact and function with each other as human beings. The social sciences need to catch up with the hard sciences, the scientists and engineers.

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"I use Google Gemini and ChatGPT. It's absolutely frightening to me how much better it's gotten in the last couple of months, let alone a couple of years."

Streiffer noted that AI is an application that runs on computing hardware. "The hardware that we run the AI on right now is resource intensive unlike AI. The expensive computers that we have at Oak Ridge are still some of the best in the world for running AI, doing model training and other operations."

He said that the ORNL supercomputer Frontier runs on roughly 20 megawatts. In contrast, the human brain needs only 20 watts, or a million times less energy, to process information. That's why ORNL needs its 7200 employees!

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Thank you, Carolyn, the AI Panel has amazing breadth of knowledge on AI and you have captured it well. The second of the three-part series will continue the discussion by the panel and share even more AI insights.

Alan Lowe, the moderator (Courtesy of Alan Lowe)

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Stephen Streiffer, Director of Oak Ridge National Laboratory (Courtesy of ORNL)

Ashley Stowe, chief research and university partnerships officer at Oak Ridge Associated Universities (Courtesy of ORAU)

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Lynne Parker, former principal deputy director of the White House Office of Science and Technology Policy and former founder of the AI Tennessee Initiative (Courtesy of Lynne Parker)

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