Tennis for Two

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History

"Visitors Day" was an annual community event at Brookhaven National Laboratory (BNL) in Upton, NY (today, BNL is co-managed by Stony Brook University). Each division was expected to prepare an exhibition that showcased its current research and development projects. In the fall of 1958, the Instrumentation Division planned to display their cutting-edge contributions to science, including a sodium iodide detector, a multi-channel pulse height analyzer, and the Chase-Higinbotham linear amplifier. However, anticipating that the display would not be dynamic enough to generate interest, William A. Higinbotham and his colleagues began to brainstorm about ways to draw attention to it.

Inspiration soon arrived; after reading a manual that accompanied a Donner analog computer, Higinbotham formulated the idea of designing an interactive game, as he thought "it might liven up the place to have a game that people could play, and which would convey the message that our scientific endeavors have relevance for society." He envisioned a two dimensional tennis game displayed on a screen (oscilloscope), one in which two players could control the volleying action of a ball being struck over a net. He conceptualized and sketched the plans for *Tennis for Two* in a matter of hours. It was an instant hit with attendees of all ages. After the series of Visitors Days concluded in 1959, the game was dismantled.

For Higinbotham this was just an isolated incident in a distinguished career as a physicist and electronics expert that also included time spent at Cornell University, Massachusetts Institute of Technology (MIT), and Los Alamos National Laboratory. Recruited from MIT in 1945 to work on the Manhattan Project, he developed the timing circuits for the first atomic bomb and witnessed the test detonation in Alamogordo, New Mexico. The following year he helped found the Federation of Atomic (later, American) Scientists. A passionate advocate of nuclear non-proliferation, he worked tirelessly to educate government officials and the public about adapting atomic energy for peaceful purposes and implementing safeguards on weapons of mass destruction.

In an unpublished interview with Dr. Robert Crease, Professor of Philosophy at Stony Brook University and Historian of Brookhaven National Laboratory, Higinbotham reflected on the game:

"Historically, it [*Tennis for Two*] goes back to the fact that I had, during World War II, had spent a better part of three years at MIT in the Radiation Laboratory working on radar indicator sets - which are cathode ray tubes - and so I developed, and had asked for a number of circuits including circuits to integrate and differentiate wave forms, which were used in analog computers in those days. So I was using my old experience from way back then and my experience since then designing circuits - and we had, as it says in that report - the laboratory had several analog computers and they [inaudible] a book which tells you how to do a bouncing ball and some other things. And I look at it and say, well, obviously, with this machine I can fix it so instead of having it pre-programmed, I can fix it so people can control it, you know, what's going on - so it was a great invention, if you want to call it that, and it didn't strike me as the least bit novel. All the circuits I used were circuits that have been used by people before, except for putting these hand controls in - and a game which would go with that."

Prior to *Tennis for Two*, there were few computer-based games. *NIM* and *Chess* were developed in 1951, followed by *OXO* or *Noughts and Crosses* in 1952. However, those games did not display motion or allow dual players to control the action. The October 1982 issue of *Creative Computing* generated much publicity and sparked lively debate when Higinbotham was credited as the inventor of the first video game. Many have argued against the validity of this claim, as "video" implies the use of a raster display device, e.g., a television. While the dialogue about the scope of the term "video game" continues, what is not disputed is the high level of technical ingenuity Higinbotham employed to design *Tennis for Two*.

Higinbotham's computer game installed at BNL's visitor's day in 1958.
(Photograph courtesy of BNL)

Higinbotham's game with the title, "Computer Tennis", at BNL's visitor's day in 1959.
(Photograph courtesy of BNL)

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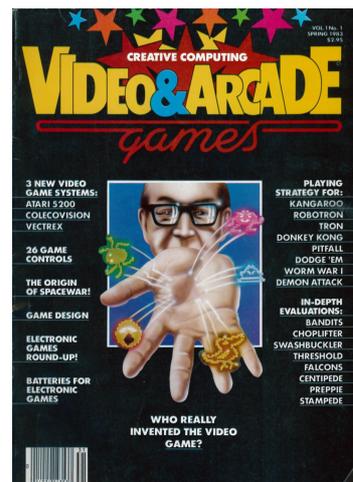
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William A. Higinbotham

After reading an instruction manual that accompanied a Systron-Donner analog computer, William Alfred Higinbotham was inspired to design *Tennis for Two*, the first computer game to utilize handheld controllers and to display motion. It was also the first game to be played by general public, in this instance, attendees of "visitors day" at Brookhaven National Laboratory (BNL) in 1958. Learn More »
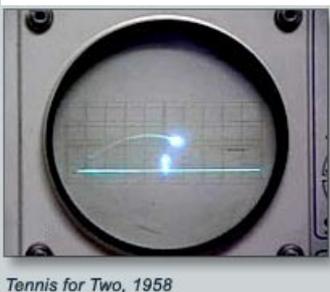
Tennis for Two, 1958

Last updated Wednesday, February 18, 2015. Tennis for Two is often regarded as one of the first video games ever created. Developed by William Higginbotham , a physicist who worked on the Manhattan Project, Tennis for Two was completed on October 18, 1958, long before the first commercial video games were ever released. Tennis for Two was released long before Pong (20 years before) was developed, and though it has a similar premise the gameplay is dramatically different and extremely simple. Tennis for Two is a Side View, Player Versus Player, tennis game. Created by physicist William Higinbotham to entertain visitors at Brookhaven National Laboratory in Upton, New York. Based on Brookhaven's military computers, which could calculate ballistics. This game provides examples of: Alliterative Title: Tennis For Two. Player Versus Player: It's a two player game, where they compete against each other, trying to make the other fail to return the ball. Side View: A side view of a tennis match, with the net in the middle. Tennis for Two (also known as Computer Tennis) is a sports video game, which simulates a game of tennis, and was one of the first games developed in the early history of video games. American physicist William Higinbotham designed the game in 1958 for display at the Brookhaven National Laboratory's annual public exhibition after learning that the government research institution's Donner Model 30 analog computer could simulate trajectories with wind resistance. He designed the game, displayed on an

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