The Dawn of Video Games: Crash Course Games #3

Crash Course: Games
https://youtube.com/watch?v=IGLdlkZozpI
https://nerdfighteria.info/v/IGLdlkZozpI

Hi, I'm Andre Meadows, and this is Crash Course: Games. Today, we're going to start talking about the 20th century and the advent of computer games. But before we get into that, let's start with a little perspective. Computers are, historically speaking anyway, very new, and they've evolved very quickly. These days, if you have a mobile device on your person, you probably have more technology with you than NASA had when they went to the Moon. And yes, I know that's kind of a cliché, but it's true. The Apollo Guidance Computer had a processing speed of 1 megahertz and it only had 4 kilobytes of memory. That means it could only hold 2048 program words. You'd better choose those wisely. Meanwhile, an iPhone 4S has a processing speed of 800 megahertz and a minimum memory of 16 gigabytes. Though to be fair, an iPhone isn't going to get you to the Moon. At least not yet. Tim Cook's got something going, I'm pretty sure. But you won't get a signal there. Trust me.

(Intro)

Historically computers, and the games that were are created for computers, are a new phenomenon. Seeing as electronic computers appeared in the 1940s. And those early computers, they were some serious tools. Colossus, not to be confused with Colossus from *X-Men* and *Deadpool*, was built during World War II to break Nazi codes and ENIAC, which is considered the first computer to be reprogrammable, it was primarily used for calculating artillery tables to help soldiers drop explosives on each other more accurately. But human beings have a long, rich history of turning serious tools into playthings and games. Pretty much as soon as we humans invent something useful, we turn it into a game. We're fun.

Spears get turned into javelins. Auto racing was invented pretty much as soon as we had cars. We even turned dating into game shows and mobile apps: swipe left, swipe right, super like. So it seems pretty natural that computer games were invented as soon as we had computers.

Those computer games weren't like the games we have today. They weren't consoles or home computers, because there were like, ten computers, and they all belonged to the army or universities, and they all cost a lot of money. But some pioneers were creating video games or electronic computer games as they were called.

Now video games, in their most basic sense, involve a game played on a computer device and projected onto some kind of video screen. The precursors to video games were computer games that were made on giant early computers to test the machines. And before those, there were electronic games, or those games made on electronic devices without a screen or a computer running the program. And now that we've made that distinction, let's just agree to call all these electronic and computer games video games, because it will make this stuff a lot easier for me to say.

We're going to start with a device know as the "Cathode-Ray Tube Amusement Device". Sounds dirty, but it's not.

In 1947, right after World War II, Thomas T. Goldsmith, professor of physics and television pioneer, and his coworker Estle Ray Mann, filed for and received what is considered the first patent for an electronic game with a video display. An ancestor of our modern video games.

The game was a series of eight cathode ray tubes, hooked up to an oscilloscope for display, and with a set of knobs as player controls. Now, cathode ray tubes were the technology behind those old, thick, heavy televisions. They would project a beam of light onto the oscilloscope, and the user would see an arc of light.

The game simulated the firing of artillery shells, and when the "shell" reached its target, its beam would de-focus, simulating an explosion. This gave players the sense that their missiles had stuck a target and caused damage.

And that was it. The technology could only generate that beam of light, so the other part of the game was a screen overlay, which would later be a regular feature of 1970s video games.

While this all sounds very fun, and had virtually unlimited market potential, the parts that went into the "Cathode-Ray Tube Amusement Device" cost a lot of money in 1947, and mass production would have been impractical. The amusement device was never made for the public.

It's like the rarest video game ever. Even more rare than *Chrono Trigger*.

Another gaming first was the display of the Nimrod Gaming Computer on May 5, 1951, at the Festival of Britain in the Dome of Discovery. The Festival of Britain was sort of like the World's Fair, but just for Britain.

And just like that weirdly specific exposition to celebrate one small island in Northern Europe, the Nimrod had a very specific task. It was one of the world's first gaming computers, designed and built specifically to play an ancient game called Nim.

Surely you remember Nim, from Alain Resnais' 1961 French New Wave Film, *Last Year at Marienbad*. No? Then you're not a real gamer.

Just kidding! Actually, the gameplay itself doesn't really matter. The Nimrod was more of a proof of concept. As one of the earliest gaming computers that the public could interact with, it helped show people that computers could be fun. And it inspired future computer scientists and game developers.

Like in 1952, when a University of Cambridge PhD student, A. S. Douglas, developed *OXO*, a graphical version of Tic-Tac-Toe. *OXO* was important because it was one of the first video games to include artificial intelligence.

Douglas wasn't a game designer, he just wanted to illustrate his thesis on "Interactions between human and computer." The computer's moves, in reaction to the player moves, and this is the interesting artificial intelligence part, they were not predetermined. They were made at the computer's discretion. The computer thought for itself! (Whispered) Skynet begins.

So far, all of this is pretty high-minded, right? All these games were made to demonstrate the power of computers, or as part of academic research. Where's the mindless entertainment of *BurgerTime*?

Okay, kids, *BurgerTime* was an arcade game in the '80s. You know what? Look it up. There's food in it. Walking hot dogs and eggs. It's cool.

Video games made the jump to pure entertainment in 1958, at the Brookhaven National Laboratory in Upton, New York. William Higinbotham, who had been a designer of electronic circuits for the Manhattan Project, was tasked with entertaining students on Visitor Day.

He looked through the lab for stuff that might divert the youth of 1958, with their hula hoops and chocolate malts. Whatever they were doing back then.

While he was reading the manual for one of the computers in the lab, he discovered that it could calculate and visualize ballistic missile trajectories. He made the natural, logical leap, and programmed the machine to play a tennis game. Kids lined up to play the game, and Higinbotham had a hit on his hands.

The important thing to note here, is that *Tennis for Two*'s success grew out of reading an instruction manual. Come on, read those manuals, kids! Technical writers are working hard to make sure you understand all the functions of your mobile device. Have the common decency to read up, and become a power user.

Actually, manuals are important, but that's not the point of *Tennis for Two*. The game was never commercialized, but it hinted at the potential of games created solely for the sake of entertainment.

Ah, so a theme is clearly developing in our history of game development! The people developing these things were nerds. Awesome, awesome nerds. Nerds!

And these nerds weren't only creating a new world of computers; they were creating a culture. And a lot of culture that sprung up around these early pioneers is still with us today.

One of the best known examples of a pack of nerds creating computer culture comes from the Tech Model Railroad Club, at the Massachusetts Institute of Technology.

Let's go to the Thought Bubble.

Founded in 1946, MIT's Tech Model Railroad Club, or TMRC, was for students who, unsurprisingly, loved model trains. But on a deeper level, what they were into was technology, and figuring out how things worked. And that sort of curiosity was peaked when computers started to appear in the mid-twentieth century. And the group would roam the campus at night, sneaking into labs to learn how to use the computers.

The TMRC developed a culture all their own, with jargon and everything. It described broken equipment as "munged", they called rolling chairs "bunkies", and famously, they called practical jokes or impressive feats "hacks", and they called the people that pulled off those hacks "hackers".

Exactly. I know what you're thinking. Just like the 1995 movie starring Angelina Jolie as Acid Burn.

In 1961, TMRC member Steve Russell, also known as Slug, set out to make the biggest hack of all: a game. He combined his love of B-grade sci-fi with his knowledge of the group's favorite computer on campus, the Programmed Data Processor-1, or PDP-1, to create *Spacewar!* Yes, the title includes the exclamation mark.

This game involved two ships, the Needle and Wedge, trying to blow each other up while flying around a gravitational point. The entire club got involved, and members all worked to expand and improve it. The game proved to be so successful that it became part of the PDP-1 operating system and was used to test new computers.

Slug graduated, got a job in computer security, and never patented *Spacewar!*, because he thought there would be no money in video games. He was wrong.

Thanks Thought Bubble!

Man, I wish I had a PDP-1 around here so I could play some *Spacewar!* That'd be pretty sweet. Woah! *Spacewar!* Exclamation point! Ha! I guess it's time for us to level up!

So this is Slug Russell's game, and those are the two ships, the Needle and the Wedge. They're inspired by ships from the pulp science-fiction books that Russell loved.

Alright, I'm gonna just try to move my ship over here. This is 1960s graphics and video game technology, ladies and gentlemen! Behold the fascination of two small, shaped objects shooting at each other! Alright, getting closer. Getting closer. I think, I don't know. There we go. Shoot my little – Yay! I got sucked into the gravity! (Laughs)

Anyway, what's really interesting about *Spacewar!* is that it inspired something called *Galaxy Game*. Now, that was the first coin-operated video game. It was basically just *Spacewar!*, but it was on a newer computer, and it was housed in a fiberglass cabinet, and people had to pay 10 cents to play it.

Oh, we're coming to clip. Oh! We went into the gravity together. Like friends that just tried to kill each other. *Spacewar!*

Galaxy Game lived at the Student Union at Stanford University from 1971 through 1979, and large groups of students would gather together to watch this! Occasionally the school had to install closed-circuit TV screens so that people in the back could watch this! This game! *Spacewar!* Exclamation point!

Okay, this is all the *Spacewar!* I can handle. I gotta stop now. Hey, it was a simpler time back then. But, no DLC.

Now, these early examples of electronic and video games aren't interesting because they're the greatest games ever made. I mean, *Spacewar!* is okay, I guess. But it sets the stage for the explosion in video gaming that we're going to be talking about next time.

That explosive growth, and the migration of video gaming from computer labs to arcades to living rooms and popular culture, definitely has a lot to do with the human desire to turn our technology into games, and seek diversion and fun. But it also has a lot to do with the coin slot on that *Galaxy Game*, in the Stanford University Student Union, and the lines of students eager to pay to play.

I'm talking money, baby. Profit, man. That's what brought video games into the mainstream.

Thanks for watching! We'll see you next week!

Stan: Crash Course Games is filmed in the Chad and Stacey Emigholz Studio in Indianapolis, Indiana, and it's made with the help of all these nice people. If you'd like to keep Crash Course free for everyone forever, you can support the series at Patreon, a crowd-funding platform that allows you to support the content you love. Speaking of Patreon, we'd like to thank all our patrons in general, and we'd like to specifically thank our High Chancellor of Knowledge, Morgan Lizop and our Vice Principal, Michael Hunt. Thank you for your support.