Home Video: Crash Course Film History #13

Crash Course: Film History
https://youtube.com/watch?v=VfJ-6nQAmtk
https://nerdfighteria.info/v/VfJ-6nQAmtk

Hello, I'm Craig and this is Crash Course Film.

Gone are the days when the only way to experience film was buying a ticket at your local theater. Instead, you can watch almost anything you want, whenever you want, wherever you want.

Film studios have made much of their back catalogs available to the public, with things like DVDs and Blu-ray, or online streaming services. And you can screen movies on TVs, computers, tablets, phones, and even some watches… if you squint really hard. Home video transformed the film industry and the ways we find and consume motion pictures.

[Opening Music Plays]

True home movies – films you can watch at home – didn't exist until the invention of 8mm film in the mid-1930s.

The first standard 8mm film stock was actually made from 16mm film with extra sprocket holes down the side. Filmmakers would run a 16mm film strip through a camera once to expose one half of the frame, and then run it in the other direction to expose the other half. Then, during processing, they split the strip down the center, creating two 8mm film strips that could be spliced together...it's just a lot of work.

Compared to traditional 35mm film, 8mm film was more portable and much less expensive to buy and develop. But it had one major drawback: when 8mm film was projected on a big screen, the image quality couldn't hold a candle to 35mm. Most home movie makers weren't projecting their films onto giant screens, though.

Instead, they would just hang up a sheet or use a plain wall. And for that, 8mm film did the trick. In the 1950s and '60s, as the American middle class expanded after World War II, 8mm film cameras became more common.

Chances are, there's some grainy, unsteady footage of your family's old vacations, birthdays, weddings, or other special occasions tucked away in an attic somewhere. Who's attic? My attic?

Now, what really brought home movies into the mainstream was the advent of home video technology. And Betamax – or Beta for short – was one of the world's first. Invented in Japan and introduced to the United States in 1975, Beta could record audio and video signals to a magnetic tape, much like the ones in audio cassettes.

You see, video technologies break up recorded images into a whole bunch of horizontal lines of visual information. To save space and produce a clear picture, early home video technologies used an interlaced format to compress the signal. In interlaced formats, when a video is played back, it displays sets of every other horizontal line in a given image, leaving the others blank.

Each of these sets is called a field. First, a field with the odd-numbered lines is shown, then an even one. Odd, even, odd even...Odd, even, odd even odd-even-odd-even. If you speed up that process until you're flashing alternating fields 25 or 30 times a second, your eye doesn't distinguish between the lines. Instead – thanks to the Phi Phenomenon – you see a moving image.

While interlaced video allowed for some pretty clear pictures, it doesn't handle fast motion very well, and the image tends to blur or strobe. It also gets weird around plaid or striped shirts. Now, Beta's main competition was another Japanese technology called the Video Home System or VHS.

It was essentially the same idea as Beta, except it was lighter, cheaper, and one cassette could hold a two-hour movie. So in the ensuing "video format wars," Beta couldn't compete. By 1980, the VHS format dominated 60 percent of the U.S. market. I think my grandfather died in the video format wars. And that market was getting bigger and bigger!

As more home video technologies were emerging and dropping in price, an enormous, untapped revenue stream opened up for the Hollywood studios. In the late 1970s and early 1980s, more people began buying Video Cassette Recorders or VCRs. Not only could these devices play home movies recorded with consumer video cameras, but they could also record TV programs and play videotapes of feature films.

Suddenly, people could watch Hollywood movies at home whenever they wanted. Kind of. At first, it was way too expensive for the average consumer to buy a video cassette of a Hollywood film.

The studios charged between 80 and 90 dollars per tape! ... WHAT!?!?! But rental chains could buy them in bulk, and rent them out to the general public for a few dollars a night. Plus late fees.

These rental chains – places like Blockbuster Video or Hollywood Video – along with independent mom-and-pop stores, flourished throughout the 1980s and '90s. Film studios started going through their film libraries and releasing old movies on home video formats as well as new ones, making money hand over fist.

As this new home video market matured in the 1980s, a number of film companies decided they could bypass the theatrical distribution system altogether and market their films straight to the consumer. The most successful direct-to-video films fell into a few main categories: inexpensive action movies, steamy thrillers, sequels to successful theatrical films, and family films – both animated and live-action. Like low-budget B-movies, direct-to-video films were often viewed as cheap knock-offs, as opposed to "real" movies that played in movie theaters.

Movies like *Nail Gun Massacre*, *Death Spa*, or *Rock 'n' Roll Nightmare* were pretty terrible, but offered a bit of good schlocky fun. Direct-to-video also gave film franchises who were dragging a bit at the box office a chance to stay alive with cheaper budgets. *Beethoven*, I'm looking at you.

Not the composer, the movie about a dog. Now, back in the late '70s, as the first consumer home video formats were coming out, LaserDisc also emerged. Rather than recording images on magnetic tape, LaserDisc was an optical format, which encodes binary data with a laser.

It's a technology that eventually led to CDs, DVDs, and Blu-rays. Even though the picture quality was superior to either Beta or VHS, LaserDisc was ultimately doomed. The discs themselves were cumbersome and fragile, the players were expensive, and you couldn't record TV shows on them.

But by the time Digital Video Discs, or DVDs, arrived in 1995, consumers were primed for a technological revolution. See, in 1987, Paramount Pictures tried an experiment. They offered the VHS cassette of *Top Gun* for just 30 dollars instead of 80 or 90.

And it was a runaway hit...who knew people liked to pay less for things? Almost immediately, other studios followed Paramount's lead. And by the early 1990s, people could afford to build their very own home video libraries.

One issue with VHS tapes is that they degrade over time. The more you watch them, the more the actual tape wears down, eventually

rendering them un-viewable...like me! In part, that's because VHS is an analog technology, while DVD is digital.

Both analog and digital technologies transmit information, usually through electric signals. One of the main differences is that analog technologies translate information into electric pulses of varying amplitudes, while digital technologies translate information into a binary format made of ones and zeros, which represent discrete amplitudes. DVDs, like most digital technologies, don't degrade like VHS tapes.

The ones are always ones, and the zeroes are always zeroes. So, the signal will always look the same. Unless you're at your parents' house where it will always look green and squished.

C'mon mom and dad, fix your tv settings! The durability of DVDs, mixed with an impressive increase in storage capacity, made them an extremely attractive upgrade from video cassettes. With all that extra storage space, home video releases could come with all kinds of fun extras.

Like: trailers for other movies, alternate cuts and deleted scenes, isolated scores, commentary tracks where the filmmakers could talk about making the film, and closed captioning that could be turned on or off. Along with new releases, distribution companies could repackage their old libraries with DVD special features and make even more money!

These days, newer technologies have started to replace DVDs. Like Blu-ray Discs and Blu-ray Players, which were first made available to the public in 2006. Like DVDs, Blu-rays are a digital optical storage devices. But unlike DVDs, they can hold full high-definition – and ultra-high-definition – video signals.

Now, when we talk about standard-, high-, and ultra-high-definition videos, we're talking about those horizontal lines that make up the image. The more lines, the clearer the image – up to a point. We label the level of definition each signal has with the number of horizontal lines, like 720 or 1080. That number is then followed by an 'i' or a 'p', indicating if the video fields are interlaced or progressive. Developed as an alternative to interlaced video, the progressive scan format flashes all the horizontal lines of picture information, instead of alternating sets of lines. Everything from the camera to the television requires a much larger bandwidth to handle progressive scan, but any motion on screen appears smoother and more realistic... Like this.

So, standard-definition video has 480 horizontal lines per image and is interlaced, so you'll see it written as 480i. Broadcast high-definition refers to video signals that have 720 lines per image, either interlaced or progressive. High-definition, or HD, has 1080 lines, either interlaced or progressive. And ultra-high definition, also sometimes known as 4K, boasts a whopping 2160 lines! That's a lot of lines! Most Hollywood films shot digitally are being filmed in 6k and and even 8k… that's a lot of k! And when we're talking about 'k' we're talking about these lines... vertical lines.

Today, we think of Blu-rays as the main high definition discs on the market. When they were first being sold in 2006, though, they came in second to their competition: the HD-DVD. The home video industry split between the two formats, with companies like Sony, Panasonic, Samsung, and Dell advocating for Blu-rays, while Toshiba, Microsoft, and Intel supported HD-DVDs. For two years the conflict hamstrung the industry, until Sony decided to incorporate a Blu-ray Player into the Playstation 3. Very clever, Sony. That was seen as the turning point in the "HD format wars," and by 2008 we stopped making HD-DVDs altogether. My Grandmother died in the HD Format Wars.

And the newest frontier in home video formats is the 4K Ultra-HD Disc. You just need a new player and a 4K TV to watch one. But if you're watching this video 5 years from now, we sound very old. Now, the other technological and cultural revolution in home video was streaming services, which did away with physical discs entirely.

Today, streaming services like Netflix, Hulu, Amazon, YouTube, iTunes, and Vimeo distribute films and television programs directly to consumers. YouTube? Never heard of it. They're even making their own original content. Netflix and Amazon produced and distributed TV series and films that have won the highest awards at the Emmys, Golden Globes, and Oscars!

These services also provide non-traditional and independent filmmakers with a more level playing field when it comes to distributing their unique visions. There are some drawbacks to streaming distribution though. You need a robust, consistent Internet connection to watch anything. Not to mention, the content you're looking for may not always be available, unless you've purchased and downloaded it. And even then, you still don't have a physical copy to keep on your bookshelves. Or sell later on Craigslist to make some money.

That said, there have never been so many ways for films to find an audience. You just have to look beyond the multiplex! Don't look behind the multiplex. There's dumpsters back there. And where the future of home video will take us is anyone's guess. This is Crash Course Film History not Film Future… so we're not going to try. But I bet it'll be awesome.

Today we talked about 8mm film as the origin of home video distribution. We traced the development of the home video market from Beta to VHS all the way to 4K Ultra-HD. And we looked at the impact of streaming services on the production and distribution of films, television, and other audio-visual content. Next time, we'll take a look at some unusual and captivating film movements from around the world.

Crash Course Film History is produced in association with PBS Digital Studios. You can head over to their channel to check out a playlist of their latest amazing shows, like Infinite Series, Art Assignment, and Above the Noise. This episode of Crash Course was filmed in the Doctor Cheryl C. Kinney Crash Course Studio with the help of these video format warriors, and our amazing graphics team is Thought Cafe.