HOW DIGITAL FILMMAKING HAS CHANGED THE FILM INDUSTRY

Devin Grady

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Bob Mendenhall
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The film industry has a very colorful and interesting history. From the late 1800s when it began with no sound, hardly any camera movement, and definitely without color, film still changed the world. And with every upgrade, with every new fad and addition, film has showed the world the seemingly endless possibilities of how to tell a story. First there was the introduction of sound, then color, on to computer effects, wide screen, 3-D, and finally, the invention of digital film. In just the last five to ten years, gradually studios and directors have been making the switch from shooting on film reels to shooting on digital media.

Just like with film still cameras, VHS, and cassette tapes, all experienced an upgrade - a bigger, better version of themselves. Not all people agree. Many recording artists still today
prefer to record their songs on vinyl then distribute them with CDs of course, but they like the
sound a record has on their songs. Not only has old media become somewhat of a personal
preference by some, but it also has had an impact on manufacturing prices, distribution prices,
and sales.

Looking at the film industry, I ask the question, “In what ways has digital media changed
filmmaking?” Every process of how a film is made has a cost. Starting with production, then
we’ll move into post-production, then distribution and sales. A 35mm film reel from Kodak
generally had about one-hundred feet of film on it. This comes out to about eleven minutes. “A
90-minute movie shot at a 4-1 ratio would cost about $13,500 for film stock if you pay $300 per
roll for recans.” Recans are bought by film studios but are unused. After production, they are
sold at a lower price. This adds up a lot when you start filming with movies that are longer than
ninety minutes or have more than one camera going at one time. Comparing this with the digital
media, it’s a strong argument against using film reels.

What kinds of digital media are being recorded on today? Most are classified as some
sort of hard drive. The RED film camera, a camera that shot a lot of the latest Hobbit movie and
others, shoots on a Solid State Drive (SSD). These drives are about $500 dollars; similar to the
price of one reel of new film. These SSDs vary in capacity and price. The upside to having these
drives is that even though they may not be able to hold much more than a reel of film, especially
shooting on 5K resolution, these drives have the ability to be deleted or edited on the spot. And
as soon as one of these drives gets full, the camera operator can dump it onto a bigger hard drive.
This is a huge step up as far as functionality. An interview with Christopher Nolan, director of
*Batman Begins* and *Inception*, revealed that some directors still prefer the use of film. “It's

1 Matthew Wagenknecht. "The Actual Costs of Film."
cheaper to work on film, it's far better looking, it’s the technology that's been known and understood for a hundred years, and it's extremely reliable. I think, truthfully, it boils down to the economic interest of manufacturers and [a production] industry that makes more money through change rather than through maintaining the status quo.”"^2 Nolan goes into more detail in another interview that to him, film captures more colors, more dark and light contrast, and can have a grungier, realistic feel. Film is tradition. Cinematographers are accustomed to film reels; how they work, feel, behave, and capture what is being shot on them.

Film reportedly captures more wide ranges of colors and light contrasts. With the use of photosensitive material, what the camera sees is what you get. Whatever light is thrown onto those film squares is what you get. This attributes to film having a more realistic and untainted look. Film is expensive to buy; maybe not in a single unit, but in bulk yes. With constant retakes and mess-ups, film reels can get expensive quick. Not only is it expensive for the filmmakers, but also the distributors. Of all the tens of thousands of theaters in the world, having to duplicate those reels was expensive and time consuming. Today, theaters have almost all moved to digital projection where copying a film may take just an hour to duplicate, and distributing hard drives, flash drives, or DVDs with the films on them is much cheaper.

"Today, the driving force isn't so much a single movie as it is the studios' bottom line — they no longer want to pay to physically print and ship movies. It costs about $1,500 to print one copy of a movie on 35 mm film and ship it to theaters in its heavy metal canister. Multiply that by 4,000 copies — one for each movie on each screen in each multiplex around the country — and the numbers start to get ugly. By comparison, putting out a digital copy costs a mere $150.”^3

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2 Jeffrey Ressner. "The Traditionalist - DGA Interview with Christopher Nolan." The Traditionalist - DGA Interview with Christopher Nolan.

On the more technical side, film isn’t generally re-usable, not like an SSD. The more times you mess up, the more film it takes. Christopher Nolan says that he never does retakes, which might be why he thinks it’s cheaper for him to do on film. Not all directors are that talented or worried about budgets as much. Perhaps they prefer to want minimal editing by doing multiple takes until done right. Film changed the world; it’s had its time and now Hollywood has made the change.

The digital age brought so many different opportunities to so many different media. The computer changed the world not only with digital writing and calculating, but with the invention of the Internet. CDs and DVDs came about, digital radio, digital television and digital sound recording. For many decades, synchronous audio was the only way to film and capture the audio of the dialogue of the actors. They were recorded on separate devices and joined later in post-production. Now with digital audio and video, these things can be joined simultaneously in one device.

Students in film-related majors are learning the new technology. Every day they are being trained in digital workflows. From digital video and film cameras, to digital video editing software, students are learning the modern ways of producing movies. Even the things students are learning in school today will not even be the same when they graduate. Movie-making is an ever growing, ever changing field. Even after graduation, learning will still continue as technology progresses. Digital recording is the new film reel. Digital is cheaper. Editing the footage, duplicating it, and distributing it takes less time and money.

Digital can convert into different formats quickly and easily. Movies shot on film at 2K resolution took a lot of compression and medium changes to get to the point where it was editable and could fit on people’s TV screens. With digital, it’s only choosing a format and the
computer taking care of the rest. Whether you want to show it on an IMAX screen or on your cellphone, there’s a format that it can be shrunk or expanded to almost as easily as clicking a button. Also with digital, playback to see if you got the right shot is a lot easier. Just like backing up a YouTube video on your computer. The workflow is much simpler and quicker. The production company, Blackmagic, recently announced at this year’s National American Broadcaster’s convention they are releasing a new digital cinema camera. It’s called the URSA.

The Blackmagic “…team on the floor in Vegas caught up with BMD president Dan May to talk about the new camera.” In the video interview, the president of Blackmagic said that the camera was built with many intentional changes to the camera’s body. One of the things he pointed out was, yes, this camera can be operated by just one person but, the way they constructed it, if you were running a full crew, it had the potential to have about four people operating it at the same time. The audio guy could manipulate the audio on one side, another operator for focus pull on another side, and color and lighting guy on one side. And the director could look at the HD ten-inch screen in the back. This camera, (body only) comes in at only six grand. This is much cheaper than mainstream film cameras and has the potential of less crew depending on what kind of operation is being run.

Not only does it affect the production side of things, but this revolution completely changed where money is put. It’s funny how as soon as digital cameras started appearing in Hollywood studios, studios began to budget for much bigger, more elaborate, and expensive computer graphics. Films like Captain America and Iron Man 2 were both shot on Canon 5D Mark II DSLR cameras. These cameras cost only $3,500. The way the production companies

4 Micah Van Hove. "Get an In-Depth Overview of the New 4K Blackmagic URSA Camera."
distributed their money was shifted drastically into more of the production section than the
distribution section.

Film is costing studios a lot more in distribution. Maybe for the director himself and his budget,
but as for the industry as a whole, it cost them a lot of money.

"Economically, the biggest shift is in the release-print market. The six major studios
spend $850 million a year to have release prints made, and an additional $450 million to
deliver them. With studios no longer needing 3,000 prints of each new film to distribute
to theaters on opening day, many photochemical labs have been closing. In Los Angeles,
two labs, Technicolor and Deluxe, process the bulk of these 35mm release prints. Pillars
of the film services industry and historic rivals for almost a century, they signed an
unprecedented truce last year — a deal with the devil — agreeing to carve up the
remaining business and both stay afloat."³

Distribution costs using digital media dramatically dropped. This is where the biggest
difference is as far as looking at the financial issue.

"The appeal of renting a DVD is diminished both by its vulnerability to dirt
particles and scratches from mishandling (since unlike videos, it is not contained in a
cartridge) and its relatively low retail price (which a consumer can weigh against the
hassle of returning rentals as well as the cost incurred by late fees). In addition, unlike
VHS tapes, which must be recorded, DVDs are stamped out, allowing them to achieve
much greater economies of scale if millions of copies are sold for the global market."⁵

The DVD changed the movie industry as well. It created a way to send literally millions
of copies around the world much more inexpensively. Of course today, we see DVDs slowly but
surely decreasing in shelf space at Wal-Mart. DVDs were convenient, but so is having the films
in your pocket. With digital transfers of movie files, it becomes easier for anyone to access them.
This leads to piracy and online streaming but that’s a whole other issue.

"The costs of distributing a major studio film for a saturated release are often quite
substantial. As Edward Jay Epstein observes, the average cost in 2003 of producing
prints of a major studio release was $4.2 million, while films with a narrower distribution

averaged $1.87 million, substantial totals given the overall costs of producing and promoting a film. At the same time, studios were required to staff distribution hubs across the world in order to manage the timely delivery of film prints, a task that could be significantly streamlined with digital projection. 

This is only the beginning. In the early 1900s, the true very beginning, film was raw, unaltered. Then editing appeared and many other inventions followed. Film critic for the New York Times, Manohla Dargis explains where he thinks film is going.

“We’re not talking about the disappearance of one material — oil, watercolor, acrylic or gouache — we’re talking about deep ontological and phenomenological shifts that are transforming a medium. You can create a picture with oil paint or watercolor. For most of their history, by contrast, movies were only made from photographic film strips (originally celluloid) that mechanically ran through a camera, were chemically processed and made into film prints that were projected in theaters in front of audiences solely at the discretion of the distributors (and exhibitors). With cameras and projectors the flexible filmstrip was one foundation of modern cinema: it is part of what turned photograph images into moving photographic images. Over the past decade digital technologies have changed how movies are produced, distributed and consumed; the end of film stock is just one part of a much larger transformation.”

Both film and digital have their pros and cons. With the moving forward of technology, most studios and directors are switching to digital movie making. Directors such as Christopher Nolan are still staying strong with the film format. The two formats may become something of a personal preference like shooting in 35mm or even Super 8 film. Many cinema camera companies are hearing the complaints and are striving to create digital cinema cameras with the same look and feel. The way you want it to look, and what story you are telling is what the art of movie making is about. This is an exciting time to work in the film industry.

6 Chuck Tryon. "Wall-To-Wall Color." In Reinventing cinema movies in the age of media convergence

Digital cinema is making independent filmmaking more common. With digital cinema cameras coming down to almost consumer level prices, more stories can be told and more ideas can be shared. In a video interview, director James Cameron said something that speaks directly to film scholars and budget moviemakers: “Pick up a camera. Shoot something. No matter how small, no matter how cheesy, no matter whether your friends and your sister star in it. Put your name on it as director. Now you're a director. Everything after that you're just negotiating your budget and your fee. So it's a state of mind is really the point, once you commit yourself to do it."
Bibliography


