

Physical vs. Digital: Audiovisual Media in Libraries

By Douglas Atkinson.

Introduction

(A [glossary of terms](#) is available at the end of article.)

In the spring of 2004 I gave a technology workshop at Capilano University. The main focus was the decline of VHS and the rise of DVD, though at that time the new format was then only two short years away from its own zenith. During the discussion period of the talk, an educational librarian advised me that her school board had made the decision to simply "skip DVD and wait for digital," which was, according to her sources, just around the corner.

Unlikely as this might seem seven years later, there was ample justification for this expectation at the time. The largest Canadian educational audiovisual vendor had invested heavily in an online streaming service to deliver digital content directly into the classroom, and both the publicity and the anticipation regarding this service had been considerable.

But it never gained the market penetration necessary for commercial success. And the company that had bowed this doomed enterprise sank about eighteen months later under the weight of unrealized expectations, a recurring theme in the age of technology.

The point of this anecdote is that librarians, who have been consistent early adaptors of technology solutions, have been anticipating the online delivery of audiovisual materials for some time now. But in this age, physical media has proved surprisingly long-lasting, for a number of very good reasons, and in spite of some blunders of almost biblical proportions.

The format war

By 2006 DVD reached its peak, and the timing was perfect for the introduction of a superior successor format to ensure the longevity of physical media as the primary method of storing and delivering audiovisual content. But instead of uniting again to build on the incandescent success of DVD, Sony and Toshiba got greedy and independently developed and launched their own high-definition media, and promptly became embroiled in a format war of epic

stupidity. The movie studios were dragged into the conflict as well, and by the time Blu-ray emerged as the eventual victor in 2008, the home entertainment market landscape had already been significantly reshaped.

BitTorrent¹

Up until the middle of

the decade, movie files were far too big to be downloaded swiftly, so the studios had remained relatively unscathed by the firestorm of theft that had already gutted the music industry. But all that changed almost overnight. In 2006 BitTorrent, a file-sharing protocol which had actually been developed in 2001 and which engages "swarms" of users to download huge files with unprecedented velocity, emerged from obscurity and rose to world-wide prominence as the ideal vehicle for illegally sharing movie files. The cracking program DeCSS² had already made ripping DVDs a cinch. Anyone could do it. And now BitTorrent enabled the incredibly rapid online sharing of movies; in short, a storm of internet file trafficking was unleashed on a global scale. Even if a rapid mass transition to Blu-ray had been possible, it would have offered no protection. Despite the new format's vaunted Advanced Content Scramble System (ACCS), Blu-ray turned out to be just as vulnerable as DVD. Hackers cracked the encryption before noon EDT on June 20th, 2006, the day the format was officially released.



Douglas Atkinson.
Photo by Lisa Eggert.

¹ For details please refer to "BitTorrent" in the 2005 Emergent Technology Report*, or search "BitTorrent" on line.

² For details please refer to "DeCSS" in the 2001 Emergent Technology Report*, or search "Jon Lech Johanssen" on line.

*To access reports, contact datkinson@cvs-midwesttapes.ca

Netflix

In January of 2007, Netflix launched "Watch Instantly", a commercially viable and extremely affordable streaming service. With a captive subscriber group of millions of DVD mail-order customers, the new service – initially mocked by industry insiders and studio executives – disrupted the entire home entertainment ecosystem by proving that a content aggregator could make money – a lot of money – streaming a relatively modest catalogue of older movies and television shows.

The studios and digital delivery

Throughout all this, the studios had attempted their own forays into the digital realm, primarily through the ill-fated Sony vehicle Movielink (initially launched as Moviefly in late 2002), which was only ever available in the United States, and only viewable on Windows-based computers or on a TV connected to a Windows-based computer. While Movielink was a non-exclusive site, it never achieved much in the way of market share. The studios sold it to Blockbuster in 2007, and did not venture back into the business in any serious way until the launch of UltraViolet in October 2011.

UltraViolet

This brings us up to the present day. The studios have once again forged a commitment to work together (no small feat for that crew) and created a single website which launched on October 11th 2011. The new site, UltraViolet, is intended to "allow consumers to purchase content in one physical or digital format and access it across all platforms via a cloud-based system."³

"DECE [the Digital Entertainment Content Ecosystem], a consortium made up of over 60 Hollywood studios and retailers, has been working on the 'buy once, play anywhere' service for the past three years. The thinking is that increased accessibility will inspire people to buy rather than rent, and perhaps even pay extra for the ability to watch their content in a variety of formats. Gone are the days when consumers have to choose between a Blu-ray that looks great on their high-def TVs but won't play nice with their computers, or a DVD that looks crappy but can be played on more devices."⁴

³ Film: "Cloud-Based "Digital Locker" System UltraViolet Launches..." by Angie Han, Oct. 12, 2011

⁴ *Ibid.*

So, even though the studios have joined forces to present a united offering with their new Ultraviolet site; lo and behold, the whole project is based on the premise that consumers still want to purchase digital copies of movies, or physical copies, the digital versions of which are then uploaded into their personal "digital locker" on the Ultraviolet site.

To quote BTIG analyst Richard Greenfield: "The studios are simply trying to force something to occur that makes no sense for the consumer. In a digital world, rental has become so convenient there is simply no need to purchase content anymore."⁵

Electronic Sell-Through

As it turns out electronic sell-through, upon which the studios have pinned their hopes, actually dropped 8.2% in the last quarter of 2010 (shocking for any digital delivery format at this point in the proceedings), while VOD (video on demand) increased by 23.1% in the same period. Now, the studios, obviously in possession of this information as well, are certainly aware that online purchases are nowhere near where they need to be. However, their overarching problem is that renting – either through "bricks and mortar" stores, kiosks, mail-order as per the Netflix and zip.ca models, and digital streaming – earns only a fraction of the revenue gained by the direct sale of both physical and digital media copies to customers. So Hollywood's apparently irrational choice of an exclusively electronic sell-through model could be interpreted as either blind optimism, or desperation, or a combination of both. But the fact remains that sales of physical media are slowly declining, and if the studios wish to continue to do business as they have for the last few decades, which includes making the ever-bigger blockbusters that are their bread and butter, they need to engineer a significant increase in the revenue earned through electronic sell-through; otherwise, sooner or later, they just won't be able to afford to make those big budget films.

Netflix isn't helping

Netflix's bargain-basement subscription streaming model has become so entrenched in the human consciousness that its name is now practically a synonym for the online streaming of movies and TV⁶. In the process, Netflix has also made streaming itself

⁵ [Homemediamagazine.com: "Wither Digital Sell-Through?" by Erik Gruenwedel, Jan. 11, 2011](#) (see [July 2011 Emergent Technology Report](#), p. 24)

⁶ See the Netflix chapter in [July 2011 Emergent Technology Report](#)

cool (as of May 2011, Netflix streaming actually surpassed BitTorrent use); and unfortunately for the studios, it's also helped make streaming cooler than electronic sell-through (just another reason EST is not gaining the traction the movie studios had hoped for).

So what does this all mean for libraries?

Well, libraries know from decades of purchasing audiovisual content that whatever is happening in Hollywood flows down to everything else, including what kind of content will be made available to libraries, and on what media formats it will appear. The question of whether physical media will eventually give way to digital delivery is not under dispute by anyone except the most delusional physical media supporter. But truly gauging the speed of the migration of the bulk of the movie industry from physical media to a digital environment is a very tricky proposition, especially nowadays, when the antagonists in this unfolding drama have learned very well how to manipulate the message to support their own agenda, and cast the other's into disrepute.

And now the numbers

We're going to have a look at 2011, courtesy of the Digital Entertainment Group.⁷ For the purposes of this paper, I have taken the liberty of reorganizing their original spreadsheet from a rental vs. sell-through comparison into a physical vs. digital comparison. Also, since the DEG combines physical disc mail-order and streaming in their subscription totals, I've taken another liberty and separated physical from digital based on Netflix's 2011 Q3 subscription ratios⁸ as follows:

DVD mail-order: 13.93m subs = 39.37% of 35.38m total subs
Streaming: 21.45m subs = 60.63% of 35.38m total subs

And these are the results:

⁷ http://www.degonline.org/pressreleases/2011/DEG_MID_YEAR_2011_REPORT.pdf

⁸ [Mercurynews.com: "Netflix Loses 800,000 subscribers in three months, stock tanks" by Troy Wolverton, Oct. 24, 2011](http://Mercurynews.com: \)

Source: DEG Mid-Year 2011 Report

U.S. Consumer Spending (in millions)	First Half		
	2010	2011	YOY
Physical Media			
Sell-Through Physical Media (DVD & Blu-ray)	4737.77	3870.06	-18.31%
Bricks and Mortar Rentals (video stores)	1242.34	896.50	-27.84%
Subscription (physical)*	422.70	615.73	45.67%
Kiosk	576.35	805.55	39.77%
Total Rental Revenue	2241.39	2317.78	3.41%
Total Physical Media Revenue	6979.16	6187.84	-11.34%
Digital Delivery			
EST (Electronic Sell-Through)	259.92	270.32	4.00%
Subscription (streaming)*	650.97	948.23	45.66%
VOD (Video on Demand)	889.94	929.14	4.40%
Total Digital	1800.83	2147.69	19.26%
Total U.S. Home Entertainment Spending	8779.99	8335.53	-5.06%

*calculations based on Netflix's Subscription Ratios

What the numbers say

This chart indicates that physical media is indeed on the wane, though hardly in free fall.

The combined physical mail-order and kiosk rentals of DVD & Blu-ray more than made up for the serious decline in traditional video store rentals, but even after accounting for the revenue bulge created by *Avatar* in 2010, we're still seeing a 10% net drop in physical media sell-through. Far more alarming from Hollywood's perspective is the feeble 4% growth in electronic sell-through. Again, it is the studios' great hope that UltraViolet will help to drive up those numbers, but given the evident trend towards renting as opposed to purchasing in the online environment, that hope may not pan out.

Very simply, consumers are buying less and renting more (though apparently not from video stores). They rent physical media through cheap mail-order subscription services (Netflix) and at bargain kiosks (Redbox), or they stream their new releases primarily through cable-based video-on-demand services and their older content through subscription services. And Hollywood is not happy. What they would really like to see is sell-through with the same kind of explosive growth rate as eBook.

The eBook tsunami

Now, this isn't an article about eBook, so I'm not going to go off on a tangent and start to make comparisons with the respective performances of digital books versus digital audiovisual; but it is more than safe to say that online A/V has enjoyed nothing remotely resembling eBook's phenomenal sales growth over the last fourteen months.

A sudden and dramatic surge in eBook circulations in the late spring and early summer of 2010 turned into explosive growth over the Christmas holidays (everyone got eReaders from Santa) and into January of 2011. And it has not let up since. For instance, Toronto Public Library reported almost 400% growth in eBook downloads in May 2011 versus May 2010⁹, an astonishing increase indeed. But before we get overwhelmed by digital fever, it's germane to point out that eBook currently represents only a tiny fraction of TPL's total circulations.¹⁰ Now, put in this context the increase suddenly seems insignificant, but that is absolutely not the case. A 400% growth rate is exponential, and if TPL's eBook circulations maintain that rate of increase they would engulf the system's entire circulations in about five and a half years.

Now, a discourse on whether or not this will occur, and how much stress such growth will place on infrastructure and so on, is the domain of a different article. Suffice it to say that for the purposes of this article we are primarily interested in how the shockwaves from eBook's explosive growth curve may have altered librarians' perception about the potential for the digital delivery of audiovisual materials.

The consequences of eBook's growth

In fact, the whole attitude toward the physical audiovisual formats has changed. Because of the shock of the eBook onslaught, there now seems to be an increasingly entrenched belief that the next significant change in audiovisual materials is not going to be a transition from one physical format to another at all, but rather a wholesale transformation from physical media to digital delivery, though what form the latter might take remains a complete unknown. Regardless, this belief has consistently overshadowed library discussions concerning the transition from DVD to Blu-ray, despite the fact that this format transition will almost certainly have a far greater impact on library circulations in the immediate future than will the advent of digital audiovisual delivery.

⁹ [Thestar.com](#): "'Huge spike' in eBook downloads at Toronto Public Libraries" by Paul Moloney, June 7, 2011.

¹⁰ [Ibid.](#) Moloney reports: "In May [2011], readers accessed 21,736 e-books versus 5,629 in May, 2010." He adds: "The library's total circulation of hard copy materials came to more than 32 million last year" which indicates an average of roughly 2,700,000 per month. This means that, in this May to May comparison, eBook sales increased from 0.2% of circs to 0.8% of TPL's total circs.

The great illusion

Many in the library community, perhaps overawed by eBook's staggering circulation performance, have somehow acquired the misconception that libraries can duplicate this surge with audiovisual materials, that they could conceivably move, if not immediately, then in the relatively near future, to a fully functional audiovisual digital delivery model which includes the same type of new releases they are getting on physical media. Just like eBooks. And from a technological standpoint libraries could probably begin streaming the full complement of all available audiovisual content, including VOD-type rentals of new release theatrical films streamed from a dedicated vendor portal into patrons' homes. Unfortunately, the cost would be absolutely prohibitive, far, far beyond anything that might be considered even remotely possible.

Per circ costs: physical media versus digital delivery

If we break down the cost per circ of physical audiovisual media versus digital audiovisual media we are talking about a difference on another order of magnitude. The average cost of a DVD comes in at about 10 cents per circ¹¹. By comparison, the cost of a digitally delivered newly-released feature film (in the same window as DVD or Blu-ray) would currently be in the neighbourhood of \$6 per circ, or about 60 times the cost per circ of physical media. And, that cost is unlikely to go down regardless of who is doing the streaming. Think publishers are tough? Try studio executives who don't even like the aggregators that are currently streaming their new releases for full price. In other words, there is simply no existing affordable library revenue model for digitally deliverable versions of the same new releases that are available on physical media. And from where I sit, it is difficult to conceive of a scenario in the near future in which that situation might change.

Now, in the next twelve months it is reasonable to assume that we will see some relatively modest, relatively current, primarily non-fiction offerings from some of the major players in the market. I think we can also assume that sooner or later a Netflix-type backlist catalogue of feature films will be available at something approaching affordability, though when the latter might take place is anybody's guess.

¹¹ Calculation based on data gathered from a CVS Midwest Tape North America-wide sampling of average per unit cost of library DVDs versus the average lifetime circulations per unit.

In other words, like it or not, it looks like libraries are going to be tied to physical media for their new releases for the immediately foreseeable future.

Video stores are vanishing

There is this overarching belief that video stores are vanishing because physical media is dead. But that is not true. What the numbers in the DEG report are telling us is that physical media is not dead. Not by a long shot. It is the "bricks and mortar" video store that is dead. It is dead because Blockbuster killed virtually all of the competition, and then it went and died, its death the result of a combination of bad management and strong, efficient competition, not from streaming companies, but from Netflix's physical mail-order business and Redbox kiosks. On this side of the border, Blockbuster Canada was very profitable, thank you very much, but when the U.S. parent went down it sucked its little Canadian subsidiary with it like a lifeboat after a sinking ocean liner. At any rate, since Blockbuster went down, video stores have been extremely hard to come by.

Libraries are experiencing a surge in their DVD and Blu-ray circulations

Enter libraries, stage left, who are now reporting big jumps in DVD and Blu-ray circs.

Small wonder. The studios are reluctant to see physical media go and are still fiercely supporting it. According to the DEG, 77.5% of consumers apparently still want their home entertainment on disc. People can't get all the titles they want through subscription services and VOD. But the video stores are almost extinct. So... they go to the library.

Anyone see an opportunity here?

Aside from Netflix's mail-order service (similarly available through copicat zip.ca in Canada), and Redbox kiosks (not available in Canada at all), there are virtually no physical media rental options left for consumers – except the library. In addition, since the library can provide everything that people want on physical media, and since 77.5% of people still seem to want it, and since there are virtually no other remaining outlets for renting this material, and it's free at the library... well, if that isn't opportunity knocking, I don't know what is.

The future of audiovisual materials in libraries

Once again, no one is attempting to gainsay the decline of physical media. But if the current 18% year-

to-date drop in physical media sales compared to 2010 is an aberration caused by the *Avatar* skew, and the real decline remains steady at a rate of about 10% per annum, Blu-ray (and DVD to a much lesser extent) should retain a significant presence in the home entertainment market for the next 4-5 years. If the decline accelerates to 20-25% in 2012, then the lifespan of physical media will be correspondingly foreshortened. But in this age of technology, in which innovation succeeds innovation with increasing rapidity, long-term projections are beyond impossible, and mid-term projections are fraught with peril.

Either way, in my opinion, libraries have an opportunity and a responsibility – both to their patrons and to themselves – to keep their audiovisual collections very strong in physical media. Check your Blu-ray/DVD circs. Are they going down? Hardly.

Now certainly the digital siren beckons, thanks to the huge growth of eBook, and on more than one occasion in the past few months collections librarians have mused aloud in my presence about "skipping Blu-ray and moving right to a digital" (sound familiar?). My reply in those situations is the following: "What are you planning on streaming? Because if you shift your A/V budget completely to digital, you had better hope your patrons will be satisfied with movies of the vintage of *It's a Wonderful Life*, and television shows on the order of *Woody Woodpecker*, because at this point in time that's all that's going to be on the menu."

Obviously, if digital audiovisual remains at this stage, no library is going to invest in it. My point is simply that, while libraries may be ready for the digital delivery of audiovisual materials, digital delivery is not yet ready for them, and may not be ready in anything resembling a complete form for some time to come, if ever.

So the only choice at the moment as I see it is to remain strong in physical media for as long as possible, for a variety of excellent reasons, not the least of which is that digital copies of relatively recent releases may never be made available to libraries.

On the other hand, physical media is cheap in comparison to digital delivery, and it remains very popular, particularly with the library-going demographic in most Canadian cities and towns. Also, existing DVD and Blu-ray players – owned in the millions by North Americans – aren't going anywhere and will still be playing discs for years to come. This is not to say that libraries should not be ready to move

to digital if or when the opportunities present themselves and the economics make sense; on the contrary, I foresee a “best-case” mid-range future (maybe 3-5 years from now, but who can be sure?) in which the library collection is about 50-50 digital and physical.

Audiovisual digital delivery and the libraries

Again, there are no crystal balls, but I think the most likely future, one which will begin to take shape as we reach the median point of this decade, is that libraries will develop hybrid collections that feature back-list catalogues of digitally delivered materials in combination with strong, well-represented collections of physical materials – featuring not only new feature film theatrical releases, but also a far more extensive collection than the limited physical media offerings which will still be available in the consumer home entertainment marketplace. These physical materials will be provided by a new breed of vendor that will have the capacity to duplicate Blu-ray and DVD on demand for popular adult and children’s theatrical releases from all studios, children’s television series and stories-from-books shorts, a full complement of relevant non-fiction video materials, audiobooks in the CD and MPG-3 format, and music CDs.

That, in my opinion, is how it will probably play out. But as I have said previously, the future doesn’t just happen, it’s made. Libraries would be wise to remember that it is within their power to shape the future of these venerable and most valuable institutions, to ensure that they don’t just survive, but thrive, as the digital age continues to unfold.

Oh yes, and there’s also a bit of bad news. Get ready to bump up those A/V budgets. Because the digital audiovisual future, whichever way you cut it, is going to be more expensive than 10 cents a circ. A whole lot more expensive. You can bet on it.

Glossary of Terms

Digital delivery – any process in which an audiovisual file stored on an online system is sent through the internet to a user.

Downloading – when a copy of a file is transferred to the user.

Electronic sell-through (EST) – when a user purchases a digital “copy” of a movie and downloads the file to their own device. The user now owns the file and can play it whenever they wish.

Physical media (physical audiovisual media, discs, packaged goods etc.) – a tangible format like Blu-ray or DVD.

Rental – when a customer rents a physical media item.

Sell-through - when a customer purchases an item (as opposed to renting it).

Streaming – when an audiovisual file is transferred (streamed) live from the source to the user, and is only viewed once. In digital delivery terms this is also often referred to as a “rental”, or “digital rental”

Subscription – when a user purchases the right to stream any file in an entire database of audiovisual materials

Video on demand (VOD) – when a user purchases the right to view (stream) an audiovisual file once.

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