26. Digitization in the cultural industries

Joel Waldfogel

The word digitization means many things, but for the cultural industries it reflects two distinct phenomena: piracy (and therefore reduced revenue), and reduction in the costs of production, promotion and distribution (with the potential to offset the effects of piracy). Digitization has therefore also given rise to a third phenomenon which we label unfiltered production: cost reduction enables cultural production without the control of the traditional gatekeeping intermediaries – for example, publishing houses and record labels – and so threatens, if creative activity is not undone by piracy, to overwhelm the consuming public with large amounts of low-quality products.

The goal of this chapter is to briefly describe what has happened to creative output in music, movies, books and television in the wake of digitization. The brief treatment here summarizes longer descriptions in my 2017 *Journal of Economic Perspectives* article and, especially, my 2018 book, *Digital Renaissance: What Data and Economics Tell Us about the Future of Popular Culture*. Readers interested in full lists of references to underlying research are directed to Waldfogel (2017a, 2018).

TWO FACES OF DIGITIZATION

The arrival of Napster brought the first face of digitization, unpaid consumption via digital piracy, to the cultural industries. Following 1999, recorded-music industry revenue began a long slide, in which revenue was halved in about a decade. The threat of piracy loomed for other products, but the music industry faced the challenge first. If digitization had brought nothing other than a reduction in revenue, then we would have expected a corresponding decline in cultural production. However, digitization also brought new technologies that reduced the costs of bringing new cultural products to market.

In music, for example, production no longer required an expensive studio but could instead be accomplished with inexpensive hardware and software (an iPhone or a Mac with Garageband). Distribution no longer required physical product and distribution arrangements with record stores, but could instead be achieved by inexpensively making your own songs available on iTunes, YouTube and, later, Spotify. Promotion, while still challenging, no longer required placement on the radio and could instead be accomplished by having some fans discover your music and then communicate their discoveries to friends.

Digitization-induced cost reductions were not limited to recorded music. Around 2005, the appearance of low-cost digital cameras capable of cinema-quality recording revolutionized independent film-making. Anyone so inclined could make a movie. Shortly thereafter, with the appearance of streaming platforms such as Amazon and Netflix, the bottleneck of theatrical distribution was broken. The US theatrical distribution system

had been able to accommodate just a few hundred movies in broad release annually. When any Internet-connected device became an exhibition venue, many movies that would not have been viable candidates for theatrical distribution could now inexpensively find audiences large enough to cover their modest production costs.

The impact of digitization on the book market has been even more profound. Book publishing has traditionally been controlled by cultural elites at major publishing houses. They sifted through submissions, many from agents, and chose to invest their editorial nurture and marketing budgets in relatively few. With the arrival of Amazon's Kindle device and publishing platform, authors had a way to distribute their work directly to consumers. Gatekeepers could no longer thwart their efforts, although much work would now be able to come to market without the steady guiding hand of editors, or even proofreaders. Cory Doctorow worried about an 'open slush pile' of self-published novels (Flood 2015).

OUTPUT MEASURES

Output of the creative industries – the number of new works produced and released each year – has grown substantially in the years since digitization. Numbers are difficult to obtain, but available data clearly indicate substantial increases in the number of new products released annually in books, music, movies and television.

We can look at sources such as Musicbrainz, an open-source, user-generated database of musical recordings, or Nielsen Sound Scan, to see that the number of new musical recordings grew by about a factor of three between 2000 and 2010. It is possible to obtain data on the number of recordings added to Spotify by year for recent years, and 2017 saw the addition of roughly 950 000 new recordings to the service. Not all of these recordings were newly recorded, but this large number of songs ingested gives a sense of the volume of new work being created.

Documenting the number of new books is in principle easy but in practice difficult. Traditionally, new books obtained an international standard book number (ISBN), but while traditional publishers still obtain ISBNs for their books, self-published electronic books at Amazon do not necessarily have these numbers. Quantifying the number of new books is complicated by, first, that each edition of the same book receives a different ISBN number and, second, that new print-on-demand releases of old books now out of copyright also receives their own new ISBNs. Despite all these complications, it is clear that the number of new titles has risen sharply in the digital era. For example, the number of self-published electronic books rose from about 10 000 to about 150 000 between 2008 and 2012 (Waldfogel and Reimers 2015; Waldfogel 2017a).

The growth of movies and television is in some ways easier to document, largely because obsessive fans maintain databases, such as the Internet Movie Database (IMDb) which documents movies and television show production, as well as epguides.com, which provides a catalog of aired programming. These sources show roughly a tenfold increase in the numbers of new movies and television shows produced between 2005 and 2015 (Waldfogel 2016, 2017b).

OUTPUT AND QUALITY IN AN UNFILTERED WORLD

Despite some challenges in obtaining specific numbers, digitization has brought increases in the numbers of new creative products brought to market. Growing numbers of new products in an unfiltered world would not necessarily lead to an improved experience for consumers. Whether it does, depends substantially on the predictability of new product quality. To see how this works, consider a stylized world in which product quality is entirely predictable at the time of the investment decision (when the book, movie or musical composition is being pitched to an investing gatekeeper). In that fully predictable world, a reduction in costs, in relation to revenue, would reduce the threshold for greenlighting proposed projects. However, owing to perfect predictability, all the newly available products would be less appealing than the lowest-quality products previously made available. The new products enabled by digitization with perfect predictability would enhance the consumer experience, but only modestly.

In the real world, the appeal of potential new products is far from perfectly predictable. Indeed, William Goldman (2012), who wrote *Butch Cassidy and the Sundance Kid*, as well as the *Princess Bride*, argued that 'NOBODY KNOWS ANYTHING' about which Hollywood movies would succeed. Academic assessments, such as Caves (2000), reach similar conclusions. This leads to the practical question: what happens to the quality of new products available to consumers when there is growth in new products, and quality or appeal to consumers is unpredictable? A great deal of the new work will be unappealing to consumers, but some of the newly available work – owing to unpredictability – will end up in the right tail of sales distributions. That is, some of the newly available work, which would not have made it to market absent digitization, will end up among the most popular products with consumers.

With suitable definitions of the types of products made possible by digitization, we can test this prediction. Testing requires empirical measures of products made possible with digitization but which would not have been released in its absence, which I have termed *ex ante* losers. The structures of the respective creative industries provide reasonable ways of measuring the number of *ex ante* losers. In music, it is songs that appear on independent record labels or self-released by artists. In books, it is products that first come to market as self-published works. In movies, it is the movies produced by entities other than the major Hollywood studios; and in television it is serialized video programming not delivered by the traditional distribution channels (broadcast networks or established premium cable networks such as HBO).

The prediction that *ex ante* losers make up a growing, and eventually substantial, share of successful new products is borne out sharply in data on music, books, movies and television. Between 2000 and 2010, the share of independent record label music among the *Billboard* 200 (the weekly list of the top-selling albums in the US), rises from about 13 to nearly 40 percent. In books, the share of the *USA Today* weekly top 150 bestselling titles accounted for by works that originally came to market as self-published works rises from zero to roughly 10 percent between 2008 and 2012. In the romance category, the originally self-published share of titles tops 40 percent.

In movies, the films produced by independent, instead of major Hollywood, studios play the role of *ex ante* losers. Documenting the share of revenue accounted for by *ex ante* loser movies is complicated by only box office revenue being easy to observe. Given the

important role of non-theatrical distribution for digitally enabled movies, this complication means that the independent share of box office revenue will tend to understate the importance of the new movies. Still, the independent share of US box office revenue rose from 20 percent to 40 percent between 2000 and 2012 (Waldfogel 2016). Also, while I cannot observe total revenue for all movies, I can observe a measure of attention, the number of movies rating a movie at IMDb. Using this measure, I can document that the share of attention garnered by independent movies rose from 15 percent to 30 percent between 2005 and 2015 (Waldfogel 2018).

As in movies, revenue data are not available for television shows. It is instead possible to obtain different measures of success, such as whether US shows are nominated for, or win, Emmy Awards. As recently as 2000, these awards were dominated by traditional broadcast networks (ABC, CBS, NBC and Fox) as well as, since about 2000, HBO, a premium cable channel. The years since 2010 have seen growth in content released by basic cable channels (such as AMC and FX) as well as purely digital distributors, chiefly Netflix and Amazon. The share of award nominations accounted for by the traditional players fell from 90 percent to less than 40 percent between 1985 and 2015. In 2018, Netflix alone received 112 Emmy nominations, compared with 108 for HBO (Gilbert 2018).

GOOD NEW VINTAGES

The new digitally enabled products in all these categories now account for growing and large shares of the currently successful products. That *ex ante* losers now end up among the *ex post* commercial winners is a necessary, but not sufficient, condition for a digital renaissance. The evidence further needed to support a conclusion that digitization has led to the creation and discovery of good products is evidence that the new crops of products are good compared with the old.

Broadly, I have two ways to compare the quality of new products, that is, those produced after digitization, with that of older crops of products. The first method relies on critical assessments, in particular multi-year 'best of' lists. Perhaps the most famous example is *Rolling Stone*'s 500 best albums of all time. If we assign each of those albums to the years in which they were released, we get a time series showing the evolution of the number of very good products – those whose quality in the eyes of some critics exceed a common threshold. By assembling many critical 'best of' lists, I can construct a music quality index covering a long period, including the years after digitization (and its devastating effect on recorded music revenue). What this process shows is that music quality rose from 1960 to 1970, then fell in the years to 1980 (Waldfogel 2012). Following 1999, when revenue collapsed, the index held steady, neither rising nor falling. The absence of a decline stands in contrast to the revenue trends. We might have expected talented musicians to stop producing in the face of sharply curtailed revenue.

The second broad approach to measuring the evolution of vintage quality relies directly on choice behavior, in particular consumers' choice of products from different vintages. The question is, after accounting for depreciation – here the extent to which products of different ages are typically used – are some vintages used more than others? If so, then the vintages that are used more, conditional on their ages, are more useful. Applying this idea requires data on usage by calendar year and vintage, which is not generally or easily

obtained. It is possible to obtain this type of data on sales of recorded music as well as radio airplay (see Waldfogel 2012; Aguiar and Waldfogel 2016).

Specifically, I define $s_{t,v}$ as the share of year t consumption that is accounted for by products of vintage v. I then regress the log of $s_{t,v}$ on dummies for age (which is measured as $t - v$), as well as dummies for vintage. The coefficients on the vintage dummies then serve as an index of vintage quality. Using these approaches, I find that that vintage quality rises from 1960 to 1970, falls to 1980, and is relatively stable through 1999. Thereafter, as digitization arrives, and even as revenue falls sharply in the wake of Napster, the quality index rises. That is, vintages of music produced after 1999 get used more, given their age, than do the vintages produced in the decade leading up to digitization. I take this as evidence that consumers find the new music, produced during the period of digitization, to be good and useful.

Data on movie usage by time and vintage are not systematically available, but I can obtain information on television broadcast of movies on US premium channels. I can see what share of the movies on, say, HBO or Showtime or Cinemax, were originally produced in each previous year. If I take these to be rough measures of consumption, then I can implement the same usage-based approach I employ in music (see Waldfogel 2016). This approach reveals that movie vintage quality rose steadily from 1975 to about 2005 and has remained high since then.

I do not have data on book or television show usage by year and vintage, and therefore rely on other types of information on the quality of recent versus earlier vintages. Two such sources are critic and lay-user ratings of television shows, at Metacritic and IMDb, respectively. In Waldfogel (2017b) I document that the ratings of the shows that critics and users like best have risen over time, an observation which is consistent with the idea that when creators make more new products, i.e. more 'draws from the urn,' a larger range of quality outcomes ensues. What tends to matter for consumers is the quality of the best material.

CONCLUSION

Upon its arrival, digitization connoted mainly threats, of lost revenue and lost control, a world in which professional creators and intermediaries would no longer be able to finance continued investment, and consumers would, at best, find themselves awash in low-quality amateur products. What has happened instead is a large growth in creative activity which, even if it contains an 'open slush pile' of unappealing work, also includes a substantial amount of work which (1) would not have come to market under the system prevailing prior to digitization and (2) consumers value highly. That is, despite early reports to the contrary, it appears that we are experiencing a digital renaissance.

SEE ALSO:

Chapter 8: Broadcasting; Chapter 14: Creative industries; Chapter 38: Motion-picture industry; Chapter 40: Music industry; Chapter 47: Platforms; Chapter 57: Video game industry.

REFERENCES

Aguiar, L. and J. Waldfogel (2016), 'Even the losers get lucky sometimes: new products and the evolution of music quality since Napster', *Information Economics and Policy*, **34 (**March**)**, 1–15.
Caves, R.E. (2000), *Creative Industries: Contracts between Art and Commerce*, Cambridge, MA: Harvard University Press.
Flood, A. (2015), 'Authonomy writing community closed by HarperCollins', *Guardian*, 20 August, accessed at www.theguardian.com/books/2015/aug/20/authonomy-writing-community-closed-by-harpercollins, accessed December 9, 2019.
Gilbert, S. (2018), 'Emmy nominations 2018: Netflix takes over', *Atlantic*, 12 July, accessed at www.theatlantic.com/entertainment/archive/2018/07/emmy-nominations-2018-netflix-hbo/565046/, accessed December 9, 2019.
Goldman, W. (2012), *Adventures in the Screen Trade*, New York: Grand Central.
Waldfogel, J. (2012), 'Copyright protection, technological change, and the quality of new products: evidence from recorded music since Napster', *Journal of Law and Economics*, **55** (4), 715–40.
Waldfogel, J. (2016), 'Cinematic explosion: new products, unpredictabilty and realized quality in the digital era', *Journal of Industrial Economics*, **64** (4), 755–72.
Waldfogel, J. (2017a), 'How digitization has created a golden age of music, movies, books, and television', *Journal of Economic Perspectives*, **31** (3), 195–214.
Waldfogel, J. (2017b), 'The random long tail and the golden age of television', *Innovation Policy and the Economy*, **17** (1), 1–25.
Waldfogel, J. (2018), *Digital Renaissance: What Data and Economics Tell Us about the Future of Popular Culture*, Princeton, NJ: Princeton University Press.
Waldfogel, J. and I. Reimers (2015), 'Storming the gatekeepers: digital disintermediation in the market for books', *Information Economics and Policy*, **31** (June), 47–58.

FURTHER READING

For the long read, see Waldfogel (2018) which has a full account of digitization in the music movies, television and books industries. For the shorter read, see Waldfogel (2017a).