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A Work of Art in the Age of Technological Disruption: The Future of Work in the Music Industry

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Abstract

While the outlook on careers in the music industry is very good, the data on specific jobs are not current. With the emergence of new technologies and new licensing regulations related to e-commerce, industry leaders admit that new positions are always emerging and evolving. The number of companies associated with the music industry is quite significant, but in reality, the future of the industry will be dependent on the efforts of entrepreneurs. To that end, it is important for those interested in music production and management to become multidisciplinary learners, combining a number of skills associated with music production, promotion, licensing, and distribution. And since technologies are in a constant state of change, it would be wise for students to develop the ability to think critically and globally, with the understanding that any particular skill set is part of larger paradigms that shift to the tune of disruptive technologies, changing economies, and complex social relations.

Keywords: job, career, entertainment industry, music industry, creative industries, content industry, technology, disruption, work, futurism, entrepreneurship

Methodology and Research Design

The methodology and research design for this study involved four phases. First, the author reviewed the top online sources for job statistics, including LinkedIn.com, Indeed.com, Monster.com, and the U.S. Bureau of Labor Statistics. Second, the author researched scholarly journals and books on the topic of employment trends, disruptive technologies, and theoretical positions on culture, economics, and technology. Third, the author reviewed a series of educational videos from various professional and education sources. Fourth, the author interviewed various scholars and industry professionals.

Introduction

Technological innovation. Democracy. Pluralism. Capitalism. Globalization. These are the pressing points to which those who dream of music business careers look and puzzle. Who hasn't nursed dreams of being a rock star, or at least of working around them in some capacity? But the reality is this: while the music industry has always been difficult to "break into," (depending on what you want to do), modern technology has made *access* much easier, while also making it increasingly difficult for musicians to get noticed. The democratization of the creative economy (Saintilan and Schreiber 2018) has opened the floodgates for would-be music entrepreneurs while, in the absence of tastemakers and gatekeepers, simultaneously drenching the market with digitized commodities. As I often tell my students, it's like trying to take a sip of water from a fire hydrant.

With the economic downturn of the late 2000s and early 2010s the job market floundered, only exacerbated by emerging disruptive technologies that promised quick results for limited cost. A number of industries felt the sting, and music was no exception. Already reeling from the disruption caused by Napster in 1999, recorded music remained on life support. While publishers prayed for licensing deals, the concert industry upped its game and record companies flirted with 360 deals. Then, prophets of doom signaled the decline of the music industry, while internet service providers seemed to prosper. It was a musical apocalypse that created both utopian and dystopian realities, depending on one's position within the new digital economy. Now, the culture industry continues to deal with the fallout of this new economy, and its impact on jobs and paychecks remains uncertain.

A Brief History

Before the Romantic era, the prospect of doing music for a living was somewhat rare. Until this point in Western history, composers worked exclusively for the Church or the State, until wealthy patrons entered the story, offering more flexibility and freedom to composers. As a new middle class developed during the nineteenth century, novice music-makers emerged from domestic parlors, banging away at newly-purchased pianos as they sang hymns and pop tunes for the family. Music publishing expanded as economic and technological development created a new market.

The piano industry and the publishing industry offered novice musicians the ability to entertain at home with quick, accessible novelty songs

and religious works. The emerging difference between "physical and non-physical mediums,"[1] (Heideggerian "thingyness") did not discourage the culture industry's ability to equally monetize both tangible and intangible products. With the expansion of public entertainment, a new professional class of performer arose amid the cross-sections of industrial manufacturing and marketing, a broad appeal becoming a kind of popular music that David Suisman has referred to as a "national phenomenon," with sounds that "accompanied a broad cultural shift in American society." This development did more than change culture, it altered our collective perception of the way the arts (and more broadly, intellectual property) could be translated into a professional endeavor. He continues:

> At the end of the nineteenth century many styles of music rang out across America. Ten thousand military bands, from coast to coast, played an eclectic repertoire of marches, European and American symphonies and overtures, operatic arias, dances, and hymns. The sounds of Italian and German opera, singing societies, symphonic concerts, and street bands filled the air and cities. Musical theater and operetta attracted the white urban middle class; vaudeville, variety, and minstrel shows appealed to a mix of middle and working-class audiences. Among African Americans in the south, one might hear work songs by day and music that would later be known as the blues by night. English ballads were sung in Appalachia, cowboy songs in the west. Religious music ranged from Moody and Sanky hymns to shape-note congregational singing and, among African Americans, music descended from slave spirituals. Of all these many musical forms, however, none had as great an impact on the emergent musical culture in the United States as the popular song industry. (Suisman 2009, 19)

Luminaries such as Thomas Edison and George Westinghouse explored the interrelationships between invention and commerce throughout the so-called "Gilded Age." Advances in industry and technology, along with sweeping cultural shifts from immigration, profoundly shaped what would become the entertainment industry. Key developments throughout

the nineteenth century made it possible for a new creative class to step into the limelight. The railroad industry made the traveling circus an event every American town openly welcomed. Light opera morphed into Vaudeville. Musical theatre made artist management and ticket sales indispensable parts of show business. And the phonograph (an archiving machine for speeches, Figure 1) made it possible to replicate and recreate events in the interest of making "records" (archives) of important milestones worth remembering. Indeed, the recording and publishing industries owe their existence to these developments, as well as many others: the player piano; the Phonautograph;[2] the cylinder Phonograph; the Gramophone; the Telagraphone; lacquer-coated discs; magnetic tape; multitrack recording; Vinyl records; cassette tape; Apple's personal computer; the Compact Disc; the MP3 (and various formats); the Internet; smart phones; and the Cloud. The eventual convergence of multiple technologies would conflate four parts of the music industry (publishing, recording, concert, products) into one, which would rely on enumerable digital services to keep the machine running and in check.

Figure 1. Thomas Edison and his early phonograph. Cropped from U.S.A. Library of Congress copy (Wiki Commons).

While technology has been good for ease of production, manufacturing, and distribution, it has also redefined the role of the musician. The "musicalization of the phonograph," (once perceived as a toy by serious musicians), advanced a new "cultural hierarchy," according to David Suisman, as gramophone companies became tastemakers and gatekeepers who signified class, elegance, and a sort of sacralization of art, which served to archive "the world's greatest musical artists" (Suisman 2009, 110).

Recorded music devices became music-making instruments, with phantom performers contained in bounded form that was transportable and eternal. The novice music lover, now, could "perform" music at the drop of a hat. Similarly, the drum machine, synthesizer, computer laptop, and smartphone have all secretly smuggled what Walter Benjamin referred to as a work of art's "aura" into every part of society, both democratizing and destroying everything in its path. In so doing, original performances (think of sound loop libraries in your favorite digital audio workstation) are endlessly copied and recopied, the smell of the original always pointing back to something that was once authentic, now merely a series of binary numbers. And it is this new "product" (whether art or not) that tastemakers and powerbrokers work to monetize. The aftermath (like dominoes) will have both positive and negative consequences for those who seek to be professional "creatives."

In 1995 Walter Benjamin's classic "The Work of Art in the Age of Mechanical Reproduction" was revisited within the context of the digital era. Douglas Davis's "The Work of Art in the Age of Digital Reproduction" prophetically exhumes the potential heaven or hell that will result from what Theodore Roszak has aptly referred to as the "technocracy" (Roszak 1995):

> It seems clear as the century unwinds that the prophets of technocratic control…overlooked the capacity of an educated elite (infused with the anarchic vitality of contemporary fine and popular cultures) to resist control [of the people] naturally, without conscious intent. Our prophets further overlooked the sheer profit awaiting those inventors and entrepreneurs able to create the sensitive, intuitive computer programs….

…which would inevitably displace not only the arts, but also the creators. Davis disentangles the way technological development would later rise to the point of automation, a development that now rivals the paradoxes and ironies of developments commonly associated with mechanization and the industrial revolution. "Only the unwary mind" he argues, "would deny the further inevitability that a 'neurasthenic' computer, programmed by humanoid codes (a fuzzy logic program, for example, such as those already used by the Japanese to run washing machines and park cars) will shortly create paintings from first stroke to last."

Voice commands for computers and other "smart devices" have now become commonplace. And virtual art, says Davis, is as obvious and automatic (as a fixture) as anything in the Digital Age, even as virtual reality promises to insert users into a "totally artificial universe medium of stereoscopic glasses and sensate digital gloves. Thus clad," he quips, "we can walk, think, and feel the manmade world in virtually the same way we experience the 'real' world." Davis reminds us of what we already know—that the machines are coming for us. Which is fine, as long as we can have Star Trek holodecks (Davis 1995, 383).

Ease of production. Simplicity of distribution. Democratic artistry. As with any attempt to fashion utopia through disruption, dystopic results become real possibilities. And we see this in the current paradigm as rising college graduates (especially creatives) puzzle over what they will do to earn a living amid the cacophony of high-tech wizards, multinational corporations, and unchecked (unregulated) balances of state and corporate power.

Futurism: How Data is Subverting the "Content is King" Paradigm

We are moving from scarcity to abundance, according to futurist and entrepreneur Peter Diamandis. Abundance for whom? Indeed, "within two decades," according to former U.S. Treasury Secretary Lawrence Summers, "we will have almost unlimited energy, food, and clean water; advances in medicine will allow us to live longer and healthier lives; robots will drive our cars, manufacture our goods, and do our chores." However, there will not be much work for human beings. Automation, robotics, and various digital technologies have already replaced many jobs, and they promise to do more (Wadwha 2014).

According to Ray Kurzweil, "Automation always eliminates more jobs than it creates if you only look at the circumstances narrowly surrounding the automation. That's what the Luddites saw in the early 19th century in the textile industry in England. The new jobs came from increased prosperity and new industries that were not seen." Kurzweil's key argument was that just as no one can truly predict the types of jobs that will be created, they also cannot predict what is to come (Wadwha 2014). The pressing question at hand concerns not the presence of automation, but the extent to which *value* is calculated and rewarded…and to whom payment is made.

"In the absence of expertise," said Theodore Roszak "the great mechanism would surely [break] down, leaving us in the midst of chaos and poverty" (7). Modern computer technology is arguably a product of some of the principles that developed during the American counterculture in the middle part of the twentieth century. In the midst of the Silicon Valley tech boom, young entrepreneurs (many of them the children of hippies) applied the liberal idea of collectivism to technology, envisioning global democratic connectivity and new forms of commerce. The "counterculture," says Tim Adams, "fed directly into plutocratic tech culture" (Adams 2017). The following is an executive summary that was prepared by the Roosevelt Institute for the Open Society Foundations. The questions raised echo a sentiment about perceived virtues and evils of technology.

> The changing nature of work in the 21st century and the widening gap in income has led to a vibrant debate about the role of technology in shaping future labor markets and overall economic well-being. For at least a decade, the debate had two clear sides: a) that technology inevitably drives the polarization of the labor market and growing income inequality or b) that the hollowing out of American jobs is the result of a host of policies that have put downward pressure on wage growth and job creation. Recently, we have seen a more balanced view emerge: technology, alongside poor policy choices, has played and could well continue to play a significant role in reducing both the political and workplace power of American workers. As a result, newer research questions have arisen: How has technology shaped not just the number of jobs but also the

nature of work? How will new economic opportunities (or constraints) affect people of color, young people, and others who have traditionally faced discrimination or lacked opportunity? And how can we develop policies that seek to balance the creation of good jobs with an acknowledgement that sharing economies, second economies, and other very different structures are presenting challenges as well as opportunities for workers? The ultimate question, then, is not only whether it will "be different this time," but also how, precisely, technology will change life for various kinds of American workers. (Open Society Foundations 2015, 1, 2)

New ideas for advances in technology are often viewed as mere science fiction, until those advances are suddenly here. In the 1960s Gordon Moore predicted that the number of transistors found on a microchip would double approximately every two years, since they were first invented in 1958. It has been predicted that this trend will (for good or ill) continue indefinitely. Certainly this applies to the current paradigm of computing. But "the exponential increase of price performance," according to tech organizations such as Singularity University, "holds true for the following paradigms of computing: electromechanical, relay, vacuum tube, transistor, and integrated circuit." Exponential technologies continue to accelerate and shape major industries. However, those industries, according to some arguments, are vertically organized in such a way that prioritize technological progress over and above *human* progress. Still, while it is true there has been a "skill-biased technology hypothesis" which points to the inevitability of job polarization and loss at the bottom and "hollowing out the middle class," others maintain that progress is always good. In the same way old industries (such as buggies and carriages) were grandfathered in during the rise of automobile manufacturing, so too will others facing the threat of automation (assembly lines, package delivery, banking, transportation, the service industry, etc.) reap the benefits of disruptive technology (Sundararajan 2017, 53; Open Society Foundations 2015, 1, 2).

Some of the most respected scientists have advised caution as we clumsily advance products and policies that may have uncertain consequences. According to Harvard geneticist George Church, breakthroughs in biological engineering are advancing at such a rate that "we can't pre-

dict how they will develop going forward." According to Joi Ito, "Crispr, a low-cost gene editing technology that is transforming our ability to design and edit the genome, was completely unanticipated; experts thought it was impossible…until it wasn't." The price of gene sequencing, says Ito, is decreasing faster than Moore's Law for processors. Much like those dark developments reminiscent of our favorite science fiction narratives, the speed at which bioengineering is moving, for example, could eclipse traditional computing faster than any of us realize and, if Church is correct, may catch us all by surprise. Big tech advances exponentially, touching every industry that relies on it for monetization (Ito 2018).

Similar to portents made by both Walter Benjamin and Theodor Roszak, Jaron Lanier (widely recognized as the father of Virtual Reality) consistently warns us about the dangers of unchecked power. Our Nietzschean "will to power" (it would seem) has become a collective need that has been emboldened through technology's ever-striking lightning bolt. Ironically, our quest for power and the unconscious desire to destroy ourselves (Sigmund Freud's so-called "death drive" or what Herbert Marcuse called "Thanatos") appear to be two sides of the same coin. Still more ironically, both musical instruments and global warfare, according to Lanier, remain two primary drivers of technological progress.

> I would argue that among musicians who work in technology today, the level of technological sophistication probably exceeds that of military programs, to be blunt. They are just really smart people attracted to making strange new sounds.
>
> In the Sixties, the hippies said "Make love, not war," and that was naive. But it might be less naive to say "Make music, not war," in the sense that the people who create musical instruments are the same people who make up new weapons. If I were perhaps one percent different, I would be over at Los Alamos designing some incredible fusion thing. (*Psychology Today* 2016)

But what about democratizing the arts? Hasn't the internet changed the game? Leveled the playing field? "In all of history, there's not another example of millions of people doing something suddenly together," argued

Lanier back in 1996, "not because they are forced to, but simply because they wanted to—without advertising, without compensation, without lines of authority, without any celebrities." In the beginning coercion was, in Lanier's estimation, absent. "The only thing that happened here was that millions of people thought this was a good idea, enjoyed the notion of participating in it, and the Web couldn't have existed without them choosing to cooperate together in a pleasant, friendly way" (Powell 1996). But now, advertising has changed the paradigm. As the mode of production relies more heavily on distributors rather than creators, a sort of economic cannibalism has developed.

The pros and cons of technological disruption are reoccurring tropes throughout literature, film, and television. Our attempts to reengineer society for the greater good have resulted in some of the greatest accomplishments in history (and some of the most dangerous). Guttenberg's printing press, the typewriter, the cotton gin, the lightbulb, the phonograph, the steam engine, the internal combustion engine, automobiles, airplanes, the telegraph, the telephone, television, the microchip, genetic engineering, and modern medicine (to name a few) all pointed to a larger process (a dream) that promised a way of life that was defined by efficiency, connectivity, and democracy. But much like the Industrial Revolution, the Digital Revolution has created a ripple effect that has an uncertain destination, one that could have profound implications concerning medical ethics, education, politics, religion, long-term healthcare, and the future of work. Ito continues:

> …we can clearly imagine the perils of amortality. Would dictators hold onto power endlessly? How would universities work if faculty never retired? Would the population explode? Would endless life be only for the wealthy, or would the poor be forced to toil forever? Clearly many of our social and philosophical systems would break. Back in 2003, Francis Fukuyama, in *Our Posthuman Future: Consequences of the Biotechnology Revolution*, warned us of the perils of life extension and explained how biotech was taking us into a posthuman future with catastrophic consequences to civilization even with the best intentions. (Ito 2018)

Technological advancement, however, is not merely about robots and automation (see Figures 2 and 3), but a continual trend that enables a vast reorganization of corporations that has a number of potential economic consequences. The following talking points continue to be of great import as futurists and economists attempt to disentangle the technological impact on the future of jobs. This is an ongoing debate about the prickly relationship between technology (particularly big tech) and the labor market.
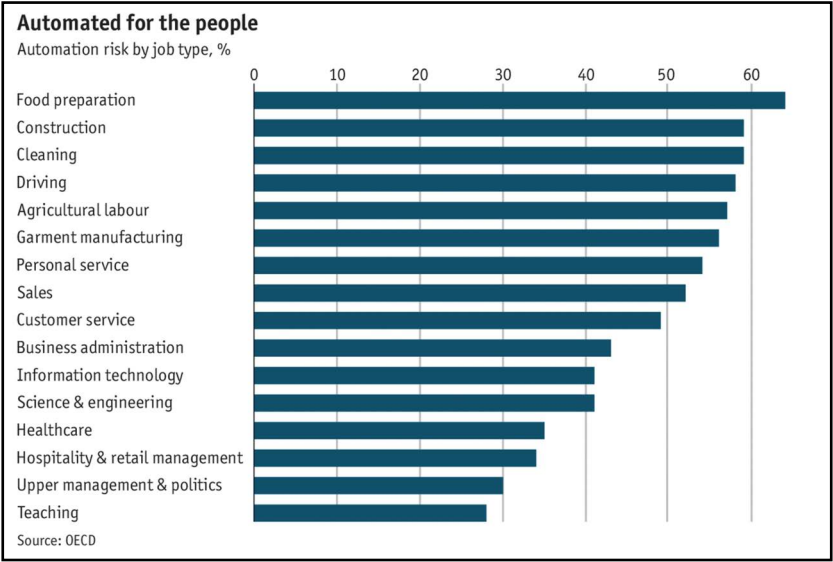
Automated for the people
Automation risk by job type, %

Job type	Risk
Food preparation	
Construction	
Cleaning	
Driving	
Agricultural labour	
Garment manufacturing	
Personal service	
Sales	
Customer service	
Business administration	
Information technology	
Science & engineering	
Healthcare	
Hospitality & retail management	
Upper management & politics	
Teaching	

Source: OECD

Figure 2. Automation risk by job type (source: economist.com).

Work Activity Category	Time Spent Across All Occupations	Automation Potential
Managing and developing people	7%	9%
Applying expertise to decision making, planning, and creative tasks	14%	18%
Interfacing with stakeholders	16%	20%
Performing physical activities and operating machinery in unpredictable environments	12%	26%
Collecting data	17%	64%
Processing data	16%	69%
Performing physical activities and operating machinery in predictable environments	18%	81%

Figure 3. Time spent and automation potential by work activity category (source: McKinsey Global Institute).

1. Will there continue to be significant developments in technology, and if so, how will it shape the economy? For some, the trend will continue in the same way as the Industrial Revolution, but others argue the trend will either level off or dwindle.
2. Institutionalists believe that to focus on the past or future impact tech has on inequality distracts us from a bigger problem, which is law and policy.
3. Although a "skill-based technological bias" has created a paradigm where workers are replaced by technology, it is important to note the systemic benefits from technology's ability to transform the structure of the economy, and therefore, the labor market.
4. We must analyze the specific capabilities of technology so we can see precisely what jobs or tasks could (or should) be automated, and any potential effect on the distribution of workers throughout the greater labor market.
5. Technology is not enough, according to futurist Nikola Danaylov. The most pressing matter is *how* we use it. This is why we need ethics, and this requires instruction (Open Source Foundations 2015).

The greatest technological disruption to the music industry has clearly been in the area of recorded music, a structural paradigm that Cherie Hu refers to as "a continuous ungrouping, and regrouping, of content" (Hu 2018). And while the Music Modernization Act promises to close the gap between service providers on one side of the gulf and songwriters and producers on the other, the extent to which disruption will affect other parts of the industry remains unclear. Yes, the concept of automation has had an impact on session musicians due to the presence of digital audio workstation libraries, and recorded music continues to be driven by the bundled service revolution, but disruption may also extend to the concert industry.

"The Internet has revalorised live performance," says Andrew Leyshon, "and now generates revenues higher than recorded music" (Leyshon 2014). The promotional engine that once drove the concert industry involved human agents. With the rise of digital marketing, however, disruption creates a paradox whereby the live industry (spirited to the fore-

ground by major players such as Live Nation and AEG Live) continues to prosper, even though street-level marketing campaigns (for now) do not offer the same job security as they once did. With one click, consumers are able to discover more details about their chosen artist on platforms such as Spotify. While listening to their favorite tunes, fans are able to study an artist's tour schedule, compare prices based on region, examine travel possibilities, and book lodging (note: even Airbnb now produces concerts). And with one click, a fan is also able to secure an annual membership fee with Live Nation for unlimited concerts. One-stop shopping!

Although the economics of the concert industry has proven to be on solid ground (somewhat), recorded music and internet platforms continue to vie for the consumer's attention. Even smart speakers (Figure 4) have entered the game, promising to reward creators and distributors in a world that is increasingly defined by the creative economy or, more accurately, the "experience economy." For example, "when Spotify CEO Daniel Ek told *The New Yorker* that his company isn't in the music space, but the moment space, he was implying that the *experience* [emphasis added] is the commodity—not music, but everyday activities tuned to Spotify's algorithms and curated playlists. Smart speakers nestle perfectly into a digital music landscape colonized by streaming platforms, the better to curate each activity as a meaningful-ly soundtracked moment" (Harvey 2018).

Record labels join the fray as they recognize that consumers prefer *styles* of music (rather than branded artists) that fit specific situations and lifestyle patterns. Will Slattery, global digital sales manager for the upstart label Ninja Tune, tends to feature music that highlights specific moods and activities. "When people start interacting with smart speakers," he says, "they're going to want to say, 'Alexa, play some chill music,' or 'play music for dinner,'" Slattery predicts. Labels could then be positioned to provide streaming
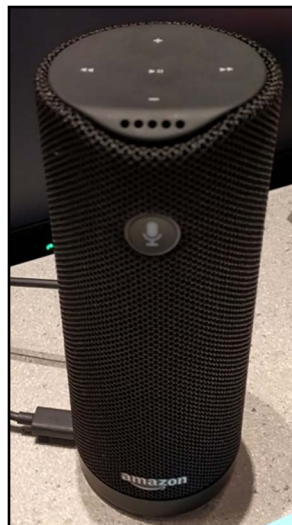

Figure 4. The Amazon Tap smart speaker on display at an Amazon Books location (Wiki Commons).

companies with metadata that allow employees to search for (and code for) songs that fit specific moods. Ninja Tune artist Bonobo, Slattery notes, is very popular on study and concentration playlists—something the producer doesn't take into account when composing his music, but which he can't deny once it's in circulation. "It is strange to imagine an artist hoping they someday get their music on fitness playlists," he quips, as opposed to getting a rave review or a plum Coachella slot. "But this will change fast. What seems like a slightly absurd way to approach music today will be commonplace tomorrow" (Harvey 2018).

Metadata has become the economic determinant for what will be successful. The promise of integration between smart speakers and lyric searches signals yet another shift, according to LyricFind founder Darryl Ballantyne. "Even though the labels aren't getting paid by us, having the lyrics available gets them paid more from other people," Ballantyne says, leading to more streams. Technology companies have been pitching their products toward the type of music consumer who might request something like "the hipster song with the whistling." Simply put, "Amazon, Apple, and Google aren't going to sell millions of smart speakers by aiming their products toward music obsessives, especially when casual fans are much more amenable to algorithmic programming" (Harvey 2018).

This new disruption could become the "exclusive province of massive firms," (who have deep pockets for experimentation), which means three of the so-called "frightful five" (Amazon, Apple, Facebook, Microsoft, and Alphabet, the parent company of Google), are poised to become somewhat the equivalent of the major record labels, but (and here's the kicker) with "exclusive holdings in hardware and software, and plenty of incentive to lock competitors' products and content out of their systems" (Harvey 2018; Manjoo 2017).

The Future of Power

Technology has become a bit of a taskmaster for those whose "will to power" affords them more social leverage within a world that grows increasingly epicurean. However, theories of classical liberalism contend that the profit motive remains one of the primary motivators for the common good. For instance, the copyright system was once based on the idea of "moral rights," whereas modern iterations and understandings of intellectual property law have evolved with the free market. Thus, the desire to capitalize on the work of content creators is necessarily entwined with the

need to protect them (or so it should be), and the protective impulse will arguably benefit all actors involved in the process, both rewarding ingenuity and benefiting society. But this dalliance between what amounts to employers and workers comes at a cost (Guthrie 2016, 98, 99).

Power is solidified within the creative industries due to specializations of labor. Though copyright protection is arguably available to anyone in most industrialized countries, the impact of the work of content producers, according to Jason Lee Guthrie, is meaningful only if it has the "potential for economic capitalization." We all know one must obtain a certain mastery at a skill for one to produce work that has economic value. "In an advanced capitalist economy," he continues:

> this level of specialization typically precludes content creators from also obtaining the specialized knowledge necessary to secure the rights to their own works. They are even less prepared to defend those rights legally if the need arises. In general, content creators in a position to produce works of such quality that they require protection are not in a position to provide for that protection themselves. (Guthrie 2016, 99)

In other words, the skills of the content producers (whether they be songwriters, arrangers, record producers, audio engineers, sound designers, etc.) are reliant on larger entities who promise legal protection and expedient, monetizable distribution. "These twin paradoxes of dependence and specialization," says Guthrie, "are fundamental to the structure of creative industries." The balance of power, as most of us well know, tends to benefit industrialists rather than creatives. With the rise of popular culture came the convergence of technology, capitalism, and commodification. The result? A disconnect between management and labor within the music industry…as Cultural Marxism once predicted. But now, *because* of technological disruption (a nod to the Frankfurt School of cultural studies), content creators are increasingly able to produce, distribute, and retain control of their works, "independently of industry mechanisms if they so choose" (Guthrie 2016, 99).

That technology will continue to redefine and remap our cultural paradigm of "work" is undeniable. Work will continue and jobs will remain, but technological disruption will loom large. Consequently, the nature of

those jobs (the power relations and levels of content ownership) remains uncertain. It has been said that the factory of the future will only have two employees, and those will be a man and a dog. The man will be there to feed the dog…and the dog will be there to keep the man away from the equipment.

Perspectives on Work in the Future (And Some Quick Visuals)

According to an Oxford study, 45% of all current jobs will disappear due to automation. In the so-called "gig economy," musicians appear to be operating as hunters and gatherers, seeking and foraging for their next meal. Depending on your perspective (and politics) the future of work is irreducibly dependent on humanity's individual and collective ability to either close Pandora's box (so to speak) or to forcibly wield its power to benefit those who deserve it. For some, automation will destroy human jobs and creativity (a dystopian outcome). For others, the creative economy will continue to grow, despite automation (a utopian outcome). And depending on how one defines a "product," the conflation of digital moments (abstractions) and the physicality of devices interconnected with digital content, will continue to feed the beast that has become IoT. "The number of IoT devices [Internet of Things] increased 31% year-over-year to 8.4 billion in 2017 and it is estimated that there will be 30 billion devices by 2020. The global market value of IoT is projected to reach $7.1 trillion by 2020," according to Chin-Lung Hsua and Judy Chuan-Chuan Lin.

In the future, "things" will potentially be digitized and networked, according to Arun Sundararajan in *The Sharing Economy*. "We are now entering a world," says Sundararajan, "where you no longer need a factory or warehouse or distribution network to be engaged in the sale of physical objects…All you need is design." 3-D printing has added another layer of complexity to growing narratives associated with disruptive technologies, creating and displacing industries and jobs (Sundararajan 2017, 56, 57). Furthermore, the world of IoT will become one where common, household items will have embedded digital intelligence, designed to alert local stores that you are running out of milk, for example. A physical object, he notes, "will know where it is and how much it is being used, and will be able to arrange automated, digitally enabled transport for itself to its renter without human intervention (56). To some extent, both 3-D printing and IoT will expand crowd-based capitalism.

The "sharing economy," according to Sundararajan, may supplant the current economic paradigm…if we trust one another and learn how to monetize our unused resources and "share" our tangible goods that are not in use (automobiles, houses, apartments, parking spaces, etc.) and turn them into services. (And just imagine how we might apply that to recorded music.) These physical objects may continue, but the way we attach value and monetize them will evolve. Will this new paradigm, he asks,

> represent the rise of the microentrepreneur—a generation of self-employed workers who are empowered to work whenever they want from any location and at whatever level of intensity needed to achieve their desired standard of living? Or will it represent the culmination of the end of broad-based and high standards of living that the United States witnessed in the 1950s and 1960s—a disparaging race to the bottom that leaves workers around the world working more hours for less money and with minimal job security and benefits? (Sundararajan 2017, 177)

To some extent, the physicality of industries built on tangible products will remain reliant on the power and appeal of *intangibles* as digital content continues to haunt every facet of the music industry, including recorded music, live events, management, publishing, licensing, software development, manufacturing, and retail (Guthrie 2016). This all seems rather daunting, but a visual of how jobs are organized and what is expected may help us to conceptualize both organizational and curricular needs. The following career map (Figure 5) once typified the universe of professional songwriters, producers, technicians, and managers in the music industry. It is not surprising that the layout of this map (the number of identifiable jobs) will shift, even bleeding over into other industries. Only within the current paradigm could a major retail outlet be considered a record label or Netflix serve as a major employer for those seeking work within the music industry.

The following is a list of general careers that have been identified by the U.S. Bureau of Labor Statistics[3] and advertised on career sites such as LinkedIn. As of 2017, the overall outlook for jobs in the U.S. places careers in "wind turbine" as the most common with careers in the dramatic arts coming in last. The ranking below offers *some* insight into career sta-
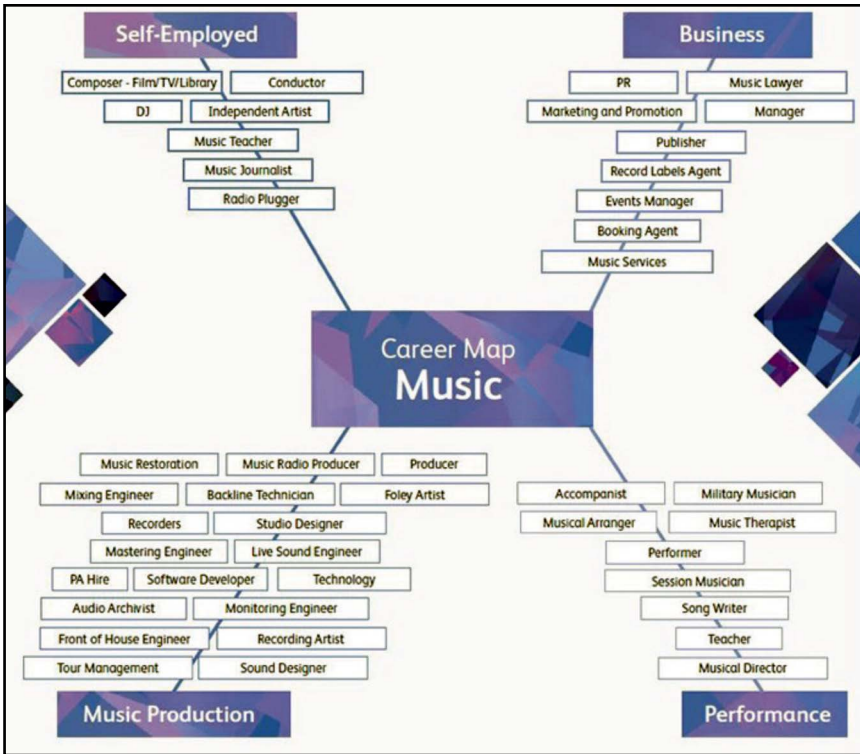
Figure 5. This career map once typified the universe of professional songwriters, producers, technicians, and managers in the music industry.

bility relative to some of the top-hiring industries, relative to the evolution of technology and the demographics of age.

1. Wind Turbine (technological development makes economic and environmental sustainability both necessary and possible)
2. Healthcare (baby boomers are retiring)
3. Data Analysts (due to technological disruption)
4. Architects and Engineering (robotics, nanotechnology, etc.)
5. Specialized Sales (due to technological disruption, ability to explain company's offerings)

6. Senior Managers (leadership needed through periods of transformation) media, entertainment, and information industries!
7. Product Designers (Creativity still requires a human being)
8. Human Resources and Organizational Development (training existing employees for new jobs)
9. Athletics
10. Regulatory and Government Relations (experts increase as companies embrace new technologies)
11. Film, Television, and Theatre (actors will sell a 3-D rendering of their persona to big tech companies)

The following is a list of careers in the music industry that have been identified by the U.S. Bureau of Labor Statistics[4] and advertised on platforms.

- Creative
  - Songwriter
  - Session Musician
  - "Record"/Content Producer
  - Entrepreneur (YouTube, Amazon, SoundCloud, etc.)
  - Voiceovers and Audiobooks
  - Music Supervisor
  - Sound Design
  - Music Communications
  - Instruction
  - Film, Television, and Gaming Industry
- Technical
  - Recording/Mix Engineer
  - Acoustician
  - Sound Design
  - Film, Television, and Gaming Industry
- Publishing
  - Licensing (film, television, gaming, eating establishments, music venues, service industries, travel industries, etc.)
  - Music Communications
- Management
  - Artist
  - Attorney
  - Tour

- Live production
        - Concert promotion
        - Stage
    - Business
    - Personal
    - Film, Television, and Gaming Industry
- Distribution, Storage, and Archiving
    - Streaming services (audio, television, film, gaming)
    - Files and storage formats (WAV, AIFF, MP3, MPEG, etc.)
    - The Cloud
    - Social Media
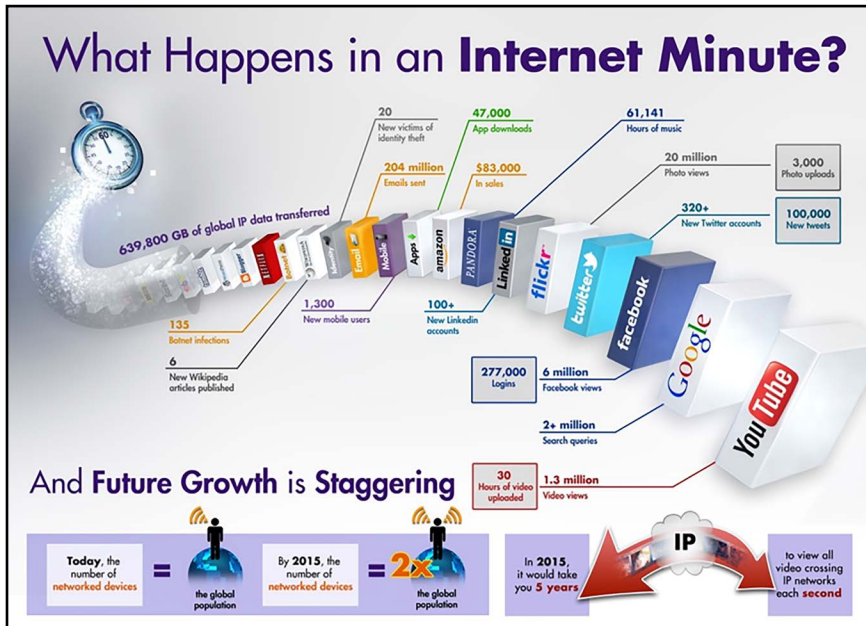- Retail and Manufacturing (the least amount of growth)

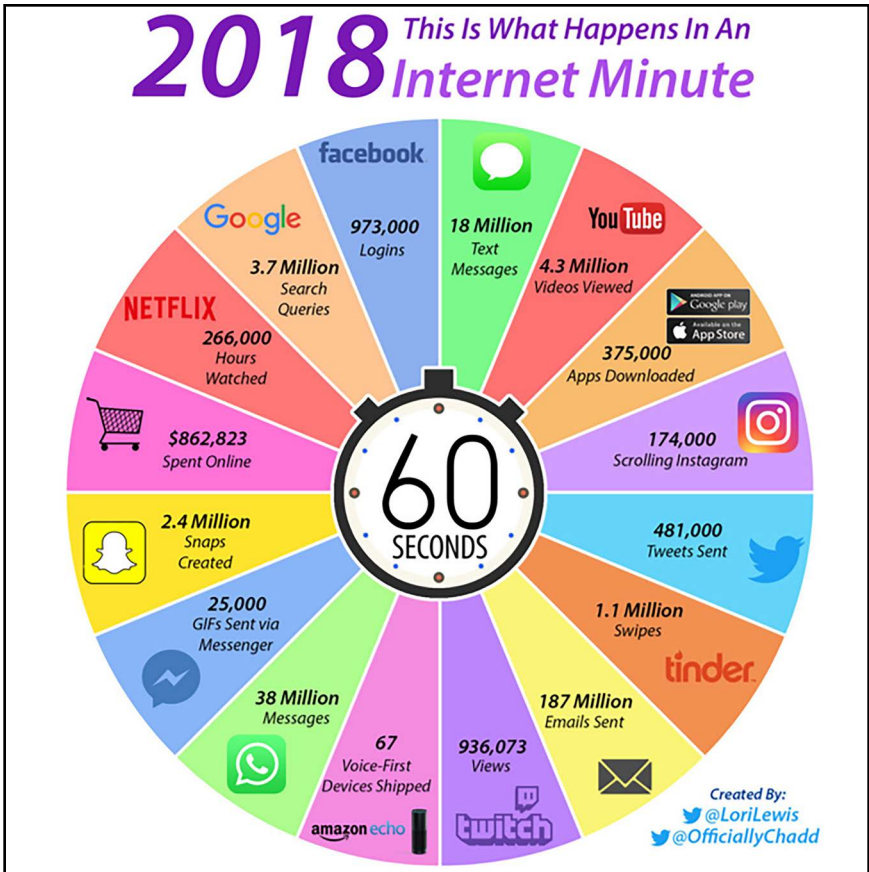Figure 6. Estimates of information flow before 2015 (Source: Wiki Commons).

Figure 7. Estimates of information flow in 2018 (Source: Visual Capitalist).

The following is a list of *some* of the major companies that list job openings related to the music industry.

Sony Music Group   Columbia
Universal Music Group   Spotify
Warner Music Group   iTunes
LIVE Nation   Shazam
AEG Live   Vevo
William Morris Endeavor   Youtube
Creative Artists Agency   Soundcloud

Pandora	International Creative Management
United Talent Agency	Apple
The Agency Group	ASCAP
The Windish Agency	BMI
AM Only	SESAC
TKO	Fender
Netflix	iHeartMedia
CBS	Rock & Roll Hall of Fame Museum
ABC	Yamaha
NBC	Clair Solutions
Amazon	Sony BMG
Disney	Time Warner
Nickelodeon	NAMM
DreamWorks	MTV
Universal Studios	Hit Factory Studio
Miramax	National Academy of Recording
Recording Industry	Arts and Sciences
Assoc. of America	

What do Employers Want?

- Transferable Skills
- Practical Skills
- Professional Portfolios
- Resume (don't write this on your smart phone!)
- Writing and Communication
- Creativity

Career Websites

- Monster Jobs
- Glassdoor
- LinkedIn
- Jobs.net
- Indeed
- CareersinMusic.Com
- Forbes
- Berklee

Making a Case for Music Industry Programs

Prospective students continue to express an interest in the fields of studio and live audio production, artist management, concert promotions, publishing, licensing, and marketing. Graduates of music industry programs will be able to work for production companies, tour companies, content development, content management, and others *related* to the music industry—and there are many of them. At the time this report was created (January 2018) there were 1,660 jobs listed on LinkedIn, well over 1,000 listed on Monster.com, and 5,651 on Glassdoor.com, all related to music production.[5] While the outlook on careers in the music industry appears to be good, the data on *specific* jobs are not current. According to recent interviews with members of the Music and Entertainment Industry Educators Association (MEIEA), the data do not yet exist, given the nature of this ever-changing industry. With the emergence of new technologies and licensing regulations related to e-commerce, industry leaders admit that new positions are always emerging and evolving.

The music industry can be divided into four sectors (publishing, recording, concerts, products), and the fields that continue to yield the most profit (revenue pipelines) tend to be the concert industry, licensing, and distribution through e-commerce. According to Nielsen Holdings, "there are five key media sellers in the media industry: TV networks, digital publishers, radio broadcasters, ad networks/platforms and multichannel video programming distributors." These sellers continue to grow and expand.[6] While the number of companies associated with the *music* industry is quite significant (see Table 1), in reality, the future of the industry will be dependent on the efforts of entrepreneurs. To that end, it is important for students interested in music production and management to become multidisciplinary learners, combining the liberal arts, business (specifically, entrepreneurship), and the various skills associated with music production, promotion, licensing, and distribution.

Those of us in higher education are well aware of this struggle to convince administrators of our relevance and students of the obvious connection between a college degree and success. Prospective students often ask, "Why college? Can't I just learn from YouTube?" The answer is, yes! And no! It is important for program directors, department chairs, recruiters, deans, provosts, and college presidents to recognize the disconnect between the bottomless pit of online knowledge (some good, lots bad), and the "curated" approach to higher education that can be traced back to

Category	Approximate Number of Companies
Movies/Video Production	58,000
Communications	13,500
Installation Technologies	11,400
Printing/Publishing	177,000
Stage & Lighting	150
Recording & Playback	275
Recordable Media	1400
Internet Service Providers	30,000
Broadcast Radio	18,000
Broadcast TV	5,300
Cable/Satellite TV	13,500
Electrical Entertainment Equipment	3,100
A/V Equipment	3,700
Music - Licensing and Royalties	175
Ad Agencies	41,000
Art/Graphic Design	63,000
Software Development	32,000
Music and Broadcasting Services	14,500
Theatrical Services	20,000
Editing - Motion Pictures	1,100
Equipment & Props - Motion Pictures	1,100
Theatrical Rentals	375
Pro/Semi-Pro Sports Clubs	3,800
Theme Parks	2,000
Cruise Lines	175
Music Publishing	1,500

Table 1. Types and number of U.S. companies associated with the music industry (Tolley 2008, 3).

the origins of higher learning. Indeed, students can locate a good number of online sources, many of them free. However, after sifting through the ocean of questionable information (YouTube, etc.), students stumble upon various webinars, online conferences, and lectures, many of these quite good. However, while these resources offer a modicum of knowledge (often mere overviews), they do not go beyond a certain skill level or offer any series of networks that might lead to an actual job. Furthermore, if the online learner wishes to be awarded credit (which verifies their knowledge to potential employers), they are asked to pay for credit hours.

Music industry programs pride themselves on an ability to meet the needs of the student, based on a number of key outcomes. These outcomes (which go through a process of rigorous institutional vetting) are intended to offer students the following advantages when it comes to the job search:

1. Curated knowledge
2. Access to a series of lifelong networks
3. Internships
4. Service-based learning
5. Experience

The cost of tuition continues to grow. However, a different view of our "value proposition" may prove enlightening, especially for the parent who (quite rightly) has become skeptical about the return on investment. In other words, educators must continue to help prospective students and their parents connect the dots, illuminating precisely what they are purchasing, as well as the value chain associated with key social networks that connect higher education to the workforce.

The information and knowledge industry markets and sells usable data. But for the college student, tuition is paying for more than merely a seat in class or credits for a transcript. The college diploma represents a transaction that is the result of years of "external" analysis and review by professionals who are connected to the very networks to which a college graduate seeks entrance. Put another way, in today's competitive market it is both *what* you know and *who* you know (Tuition = Knowledge and Networks).

In today's economy, consumers are increasingly placing a greater value on *experiences* rather than content or product. In fact, the "experience economy" goes beyond festivals and concerts and now includes any ongoing encounter with local communities that may offer access to information, career networking, friendships, and completion of Maslow's

hierarchy of needs. Today's *typical* liberal arts college must continually strive to meet the needs of "customers" who have become increasingly disenchanted with the future of work and promises made by academe. Our purpose, therefore, is to inform them of the radically changing paradigm of "work" in the music industry and to convince them of our worth as institutions of higher learning. In fact, Steve Jobs once insisted that "the best ideas emerge from the intersection of technology and the humanities." "We're not just a tech company, even though we invent some of the highest technology products in the world," he said in a keynote speech, "It's the marriage of that plus the humanities and the liberal arts that distinguishes Apple" (Lehrer 2011; Sarno 2010).

Conclusion

That the nature of employment is changing is indisputable. Disruptive technologies continue to pressure companies to redefine and reimagine what their workforce will look like. As stated earlier, many have advised caution as various industries advance products and policies that may have uncertain consequences. The Digital Revolution has created a ripple effect, and it could have profound implications concerning medical ethics, education, politics, religion, long-term healthcare, and the future of work. Again, technological advancement is not only about robots and automation. It is a continual trend (a structural process) that has potential economic consequences. Economists and technology futurists continue to inform us about impending doom or a newer, better world. Terms like "shared economy," "on-demand economy," "collaborative consumption," "crowd-based capitalism," "uberisation," and "gig economy" all point to newer versions of capitalism that redefine property and ownership, while reorienting consumers to new kinds of currency (blockchain technology, Bitcoin, etc.), and this new world will be one where we learn how to properly leverage our social networks as additional forms of currency.

Internet companies continue to challenge the conventional brick-and-mortar business model, a once dominant paradigm. An increasing number of companies are now part of the music industry, and they do not fit into the traditional models once associated with the music business: record labels, concert promoters, talent agents, etc. Rather, a vast network (literally) of cyber-companies have helped us all reimagine concepts such as property, ownership, leisure, community, knowledge, and entertainment. This interconnectivity thus implies the importance (the necessity) for col-

lege graduates and young entrepreneurs to turn on, tune in, drop in, and engage, to paraphrase Timothy Leary. Higher education is more important than ever. If a successful future is understood as something which arises out of a proper relationship between knowledge and social networks (both forms of "currency"), then music industry programs must convince prospective students of our importance to their futures in the new economy.

Employment in the entertainment and sports industries has been projected to grow ten percent from 2016 to 2026, which is faster than the average for all other occupations. Strong demand from the public for more movies, television shows, music, and video games (as well as athletic events) will contribute to job growth in the sports and entertainment occupations, according to the U.S. Bureau of Labor Statistics.[7] The implication? There *will* be jobs in the music industry. But as educators, we need to prepare our students to be flexible and, as stated by MEIEA's 2018 keynote speaker, Dina LaPolt, "collaborative, global-minded risk takers." They must strive to be multidisciplinary learners, combining skills in music production, promotion, licensing, and distribution. And they must remain flexible learners, able to respond to new disruptive technologies and the new laws that accompany them. Since technologies are changing, students must learn how to think critically and globally, with the understanding that any particular skill set they have learned will eventually become obsolete. With this in mind, prospective students (and anyone concerned about the future of work) must strive to live and learn within larger paradigms that shift to the tune of disruptive technologies, changing economies, and complex social relations.

Endnotes

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2. "Twenty years before Edison invented the recording process, Frenchman Leon Scott de Martinville invented a device for recording sound. He called it the Phonautograph and patented it on March 25, 1857. It did what it said on the tin and recorded sound, tracing the shape of sound waves as undulations or other deviations in a line traced on smoke-blackened paper or glass. What it didn't do was play sound back which may be why history is relatively silent about the Phonautograph……until 2008 when a group of U.S. researchers from the First Sounds Collective digitally converted the phonautograph recording of *Au Clair de la Lune* that de Martinville made on April 9, 1860 and it is the earliest recognisable record of the human voice and the earliest recognisable record of music." http://www.emiarchivetrust.org/about/history-of-recording/. Accessed January 16, 2018.

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