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Introduction

In this essay I will discuss the evolution of music technology and how we have moved from a product-based model to a music as a service environment. How has this transition influenced the ways in which we listen to and consume music? What impact has this had to the industry and what are the long-term impacts of music being treated as a service as opposed to a tangible product? What is ownership and what relevance does this question have in the modern world where a physical product has been exchanged for the transference of data.

Technology in Music: From Analogue to Digital and Streaming

The ability to record music and distribute material across a wide and diverse audience has had an enormous and profound impact to the music industry and indeed how music itself is created, how it sounds and how it is experienced.

Figure 1 below, provides a timeline of the advances made in music technology over the past century. What becomes evident when analysing this timeline is that the leap from the first recording to where we are now is a phenomenal advancement in how music is experienced and consumed.

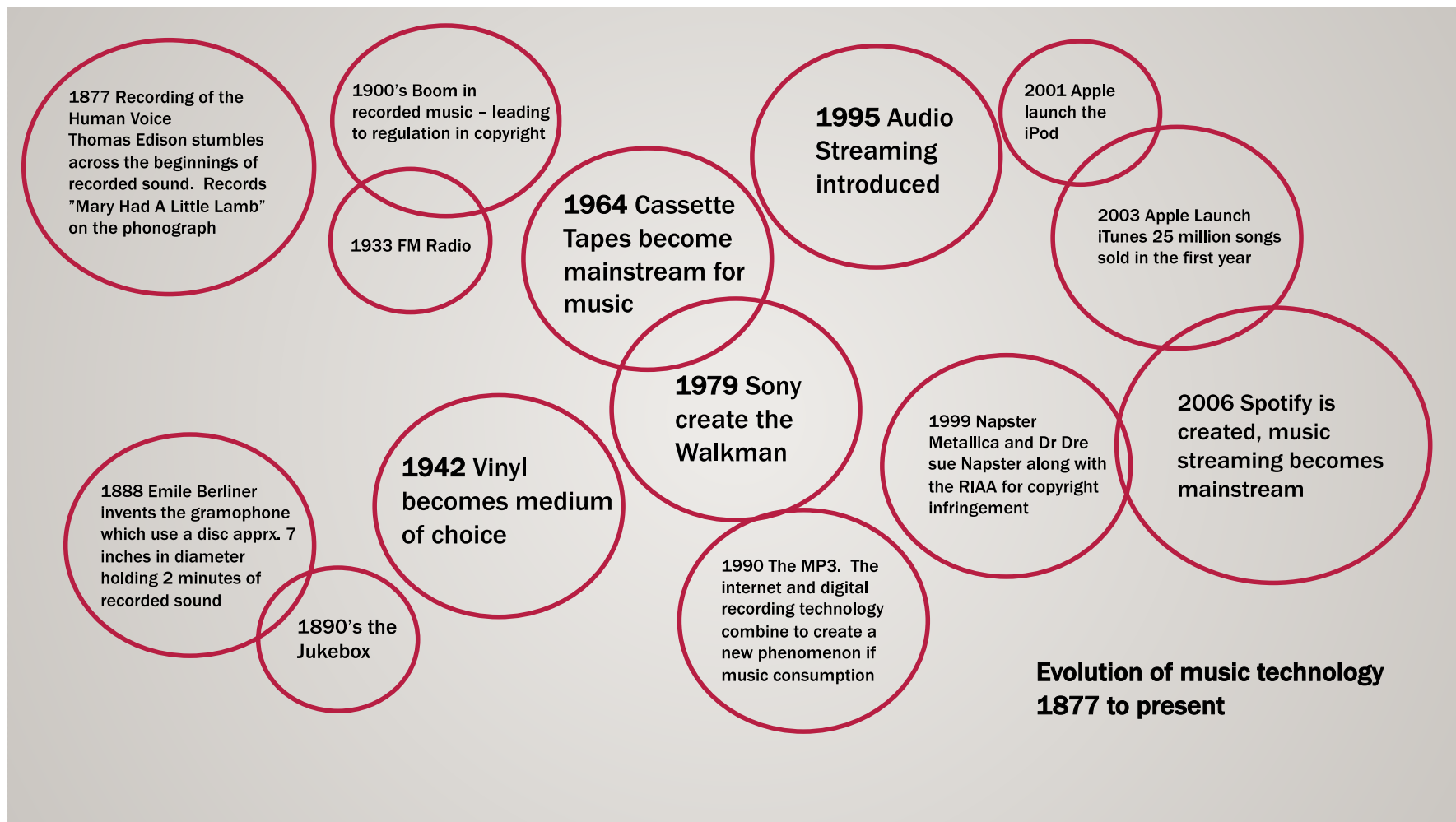


Figure 1. Evolution of music technology 1877- present

Before the very first recording made in 1877, when Thomas Edison made a recording of “Mary Had a Little Lamb” onto a metal cylinder, (National Museum of American History , 2021) music was mainly experienced in a live setting, whether in concert halls or in the home where many families owned a piano with family members being able to play musical instruments and experiencing music by performing and creating music in their own homes. Music was a communal experience, something that existed in the moment. Each performance, each listening experience was different as these songs would be performed in a different way each time and once that moment had passed that particular performance would live only in the memory of those that performed the music or were present during that moment.

Of course, it could be argued that technology has shaped how music is experienced from the very beginning, from the creation of wind instruments with simple flutes carved from bone, through to stringed instruments and the evolution of the piano. However, that would involve a great deal more time to discuss and would detract from the main point of this essay.

The moment it became possible to record sound onto a cylinder, the way in which we experienced or consumed music changed beyond recognition and so the music industry as we know it today was born. Since then, technology has provided the foundation by which the music industry and music itself is created. The onset of FM radio in the early 1930’s created a new addition to the living rooms of families and began to infiltrate the space occupied by the family piano. Where music had been something that was created in the home with each other, listening to the radio and music

performances performed live by professional orchestras and musicians introduced another evolutionary step for experiencing music at home.

The early 1940’s saw the introduction of vinyl records and in 1942 it became the medium of choice for consumers and artists. This new technology was revolutionary. Recordings could be made to vinyl in a quick and relatively cost-effective way and distributed to a wide audience. However, this new technology presented challenges in terms of how data could be stored on this new type of media. In Mark Katz book, *Capturing Sound: How Technology Has Changed Music*, Katz states that the limited running time of 78s (and later 45’s) changed writing styles. Vinyl records were limited to less than four minutes (or closer to 3 ½ minutes for 45s) a side, which prodded songwriters to shorten their compositions. (Byrne, 2012)

The limitation in this particular format helped shape the future music business landscape and made music and listening to music a lot more consumer lead. The composer and artist needed to grab the attention of the listener within a short period of time and therefore music and songs needed to be structured in such a way that would hook the listener and keep them coming back for more within a short period of time. This resulted in an explosion of artists, musicians and composers creating music that would work within this new format and therefore popular or “pop” music was born. Music consumers embraced this new world and became focussed on the hit songs that satisfied the demands of the consumer. It can be argued that in fact the landscape of the music business at this point was not dissimilar to how music is consumed today. In fact, initially there were many

critics of recorded music, who felt that phonographs actually impacted the communal aspect of listening to music and would adversely impact the amateur musician. “If we could listen to the greatest artists at the flick of a switch, why would anyone bother to learn and instrument themselves”? complained bandleader John Philip Sousa. (Thompson, 2016).

Vinyl continued to influence the shape of how music was created from the concept album by bands such as Pink Floyd and The Who, who used the format to create complete works and themes that would be threaded throughout the whole album, to groups such as the Beatles who were masters at creating 3 minute songs that would completely hook the listener, consumers started to look for more. More choice, more freedom and more control over how and where music was consumed. In the late 70’s Sony invented the Sony Walkman, the next evolutionary step in providing this choice. Cassette tapes had been in circulation for some time and had provided a more robust and flexible way of accessing and listening to music.

With the Sony Walkman and the ability to record music at home onto blank cassettes, the ability to create mix tapes that contained the listeners personal choice of music, would provide 90 minutes of music that could be easily slipped into a pocket and taken with the listener wherever they went. This technology accommodated a freedom of choice and flexibility as to how the listener would experience music. Consumers would freely be able to record music from the radio or from their peers thereby, having a detrimental impact to sales of new music and existing catalogues. Again, this new choice of where to listen had as much of a profound effect on

the industry than the ability to listen to exactly what one wanted to listen to. Michael Bull, the founder of the academic discipline of “Sound Studies” has written about the impact of the Walkman and subsequently the iPod, and points out that using such devices enables us to “aestheticize urban spaces” (Bull, n.d.) and therefore our choices overlay our own environment, we in effect, become the curators of our own soundtrack to our own lives. This personalisation of music made listening to music a more private and introspective experience and therefore, once again the music business had to adapt and evolve with the listening audience.

From vinyl to cassettes and then the transition to the compact disc and the digital age, the music industry had to find new ways to repackage their music libraries and resell their product to new generations of listeners and consumers. The ability to convert analogue data into digital and effectively compress the information into a smaller and more versatile format would result in an inevitable evolutionary step and in 1990 the MP3 file format was introduced. Combined with the increasing popularity and power of the internet, the MP3 format went on to change the way music was shared and experienced across the planet.

In the meantime, consumers were becoming more and more frustrated with the cost of buying music in CD or Vinyl format. An awakening in the buying public once again resulted in innovation and hence file sharing became prevalent and in particular Sean Parker and Shawn Fanning’s Napster lead the way. The story of Napster, it’s rise and fall are well documented through the court cases brought by the record companies such as A & M Records. (A & M Records, Inc c. Napster, Inc. 239 F.3d 1004 (9th Cir. 2001), 2001).

Napster's model of file sharing whilst not sustainable, was provocative and created an opportunity for technology businesses to take the music industry into a new era. Apple were one of the ground breaking companies to look at solving the problem of how digitised music may be accessible and controlled. The creation of the iPod and iTunes in 2001 and 2003 respectively resulted in sales of 25 million songs in the first year (Guarino, 2010). Apple had created a solution both for consumers and the music industry. Once again, music lovers were purchasing music they had previously owned in hard format, only this time consumers were downloading digitised, compressed, lesser quality versions of music they already owned for the purposes of convenience. One no longer needed to carry cassettes or CD's with them whenever they went, they could carry a device that would store thousands of tracks that they could take with them wherever they wanted.

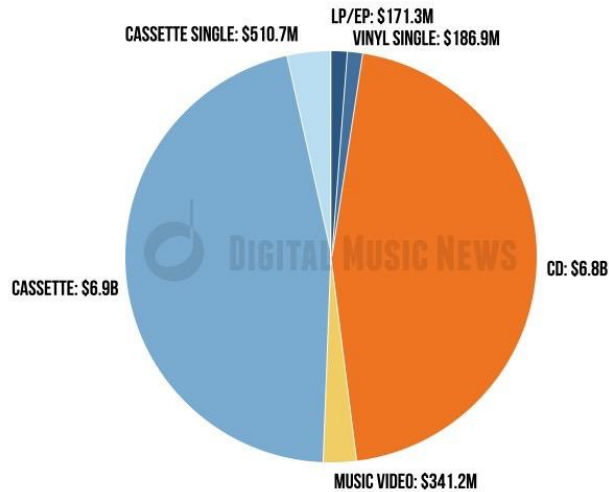
With digitisation and the dawn of downloading came an explosion in consumer choice and influence. Where hard sales of music drove

choice to a large extent due to the physical shelf space a CD could take within a record shop or to an extent, the space a record would take in the home of the consumer, digital music was a lot more mailable in that the space it demanded was stored within the cloud or a hard drive and was only limited by the capacity for data storage either by subscription by the consumer to a service or via a physical hard drive.

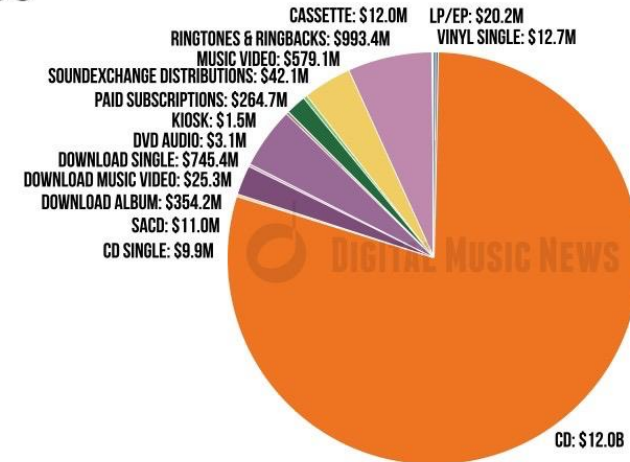
From Analogue to Digital

In 2006 Spotify first came to the market, at this point CD sales accounted for a significant percentage of the overall music market place as demonstrated in *fig2* below. At a time when music downloading was beginning to become more popular and established as the chosen method of buying music, it is interesting to note that physical sales of music was still the most popular and prevalent media format.

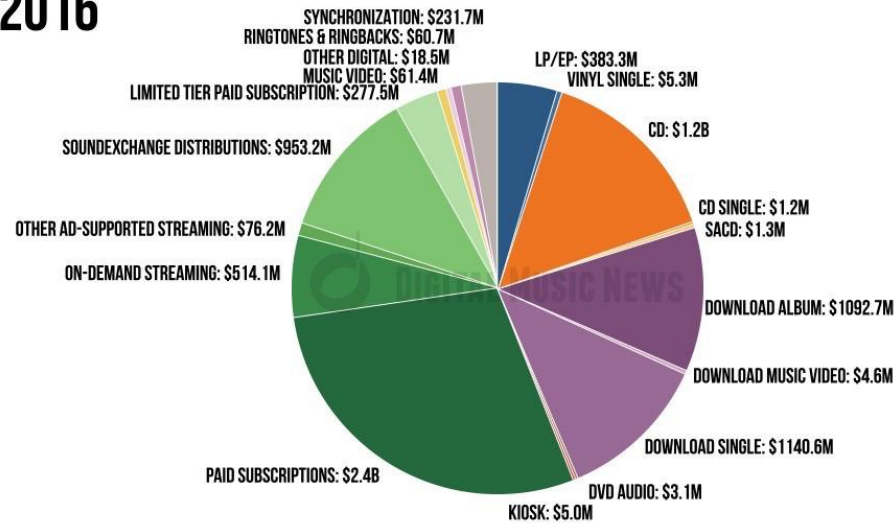
1990



2006



2016



2020

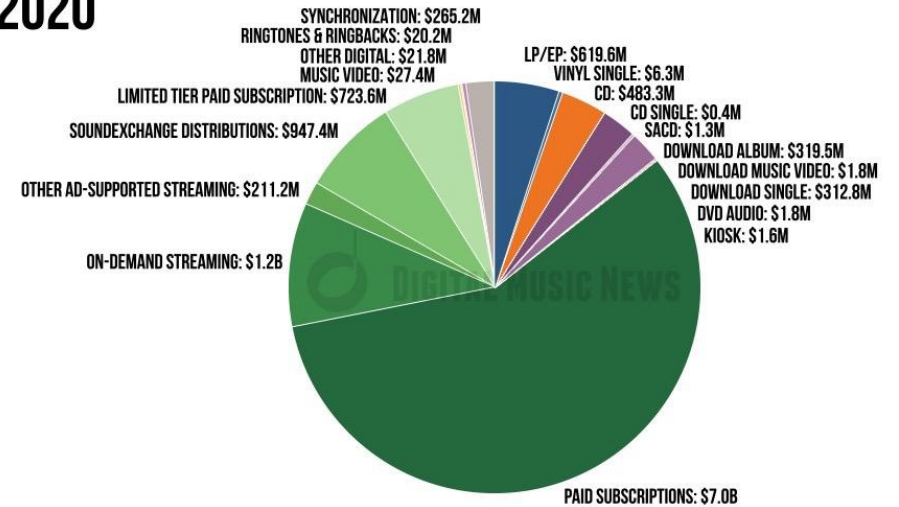


Figure 2 - Evolution of music format sales 1990 – present (Resinkoff, 2021)

By the year 2016, streaming services such as Spotify, Deezer, Apple Music and YouTube had become the dominant method for the consumption of music.

Now, the only restriction to a music listener and consumer in terms of access to music is in terms of knowledge, awareness or taste. Consumers are no longer limited by shelf space, storage space or capacity of data storage. Music lovers have access to everything, everywhere via the internet and their chosen streaming provider. This utopia may, on the service provide a world of opportunity with limitless possibilities in terms of finding music and discovering new artists and genres, however there is an argument that with so much choice the joy of discovering new music can become a challenge. Keith Jopling, consulting director for MIDiA Research wrote in a recent article in 2020 that “in the on-demand era, our choice isn’t just what’s new, or what we own, or even what’s presented to us in personalised menus, but “ All the music that ever existed” It’s little wonder I often get the feeling that what I’m listening to might not be what I could be listening to” (Jopling, 2020). With over 70 million tracks on Spotify (Spotify , 2021) alone, the choice of music available to a consumer now is immense.

Music as a Service (MaaS)

With the cost of creating and distributing music becoming relatively cheap compared to 20 years ago, the volume of music being produced now is greater than it ever has been. The ability for artists to be able to record and distribute their music through using home recording software, online distribution services such as Songtradr

and Ditto Music, has resulted in a revolution whereby, anyone with the right tools can release music to an audience in an economically viable manner. In Chris Anderson’s book *The Long Tail* he states that *‘between 2001 and 2007, the music industry’s total sales fell by a quarter. But the number of hit albums fell by more than 60 percent. In 2000, the top five albums – including megahits from Britney Spears and Eminem – sold a combined 38 million copies. In 2005, the top five sold just half of that; only 19.7 million copies’* (Anderson, 2009). This tells us that with the expanding world of choice and accessibility to music, the visibility and understanding of what sells is becoming more blurred. We are now in a market where the splitting of genres into subgenres and expanding awareness and taste in music is less constrained by fitting into specific marketable brackets.

There are both positives and negatives to this evolving state for the music industry. With traditional methods of selling music in physical form continuing to fall, with the exception of vinyl sales; music streaming is continuing to grow. Streaming is now the dominant form of media within the music industry. Whereas previous generations have placed a great deal of emphasis on physical ownership of music, such as CD’s & vinyl, the Generation Z and millennial dynamic are more concerned with access to material. Music has become a more personalised and introverted experience, however listeners still want to display their tastes in music, the clothes they wear, their beliefs. Social media is now the main method by which the voice of this generation communicates. This overt way of communicating through this style of media, mixes content such as video, music, film and them all together into one form of communication that is highly personal to the content creator; ultimately the consumer.

Conclusion

Technology has had and will continue to have a deep impact to how music is consumed. The relationship between the music industry and solution driven companies such as Apple, Amazon and Google, will only continue to become tighter as we move through a post Covid-19 world. The impact of the pandemic to the industry will drive further innovation further with a need to focus on how we bring people together again within physical shared spaces. The question that remains is how can technology solutions providers build systems that facilitates the experience of sharing music together as a communal experience again as opposed to a digital, introspective and by default derivative manner? This is how we will ignite the spark of music industry. Music is a shared experience, not just in terms of taste but in terms of how we feel when we share music with each other in the same space.

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