



*How Technology has Changed the way We Listen to
Music*

*“Music is forever; music should grow and mature with you,
following you right on up until you die.”*

~Paul Simon

A Two Part Presentation

- 1. A quick review of our music listening habits during the last 65 years.**
- 2. A look at today’s download and streaming offerings.**

Before 1948

- ▶ The phonograph, invented in 1877 by Thomas Edison, led to the development of the 78 rpm record where during the first half of the 20th century consumers could choose what music they wanted to listen to at home.



78 RPM - A Format With A Need For Improvement

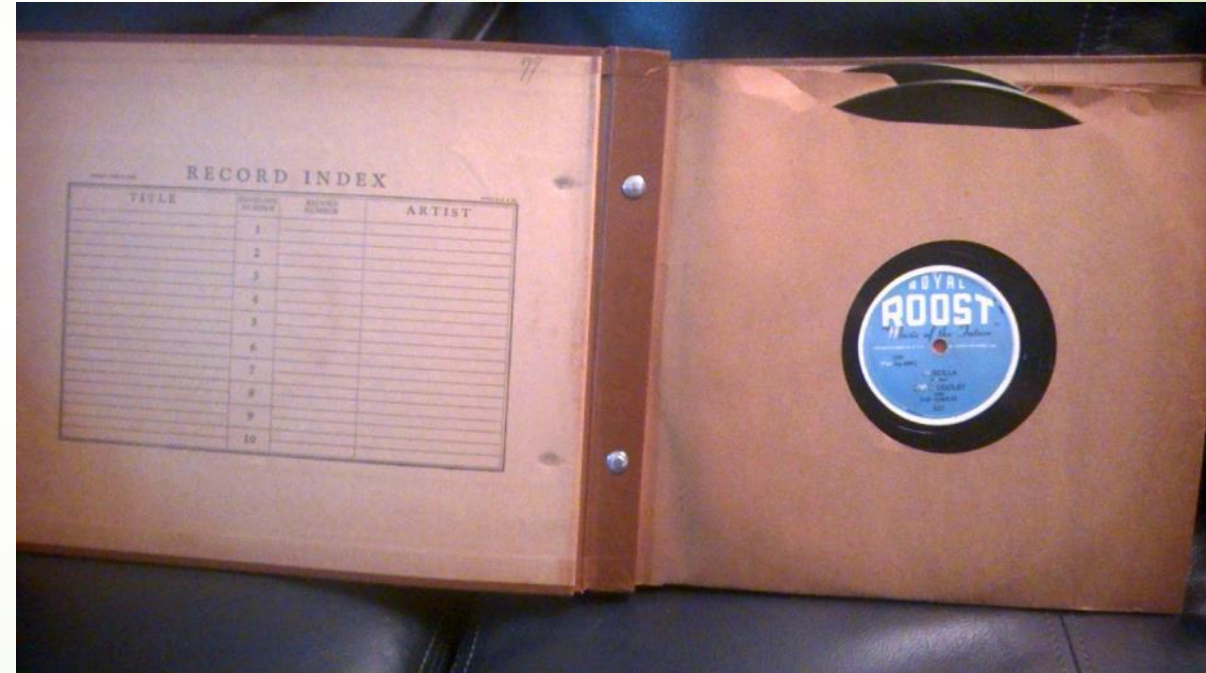
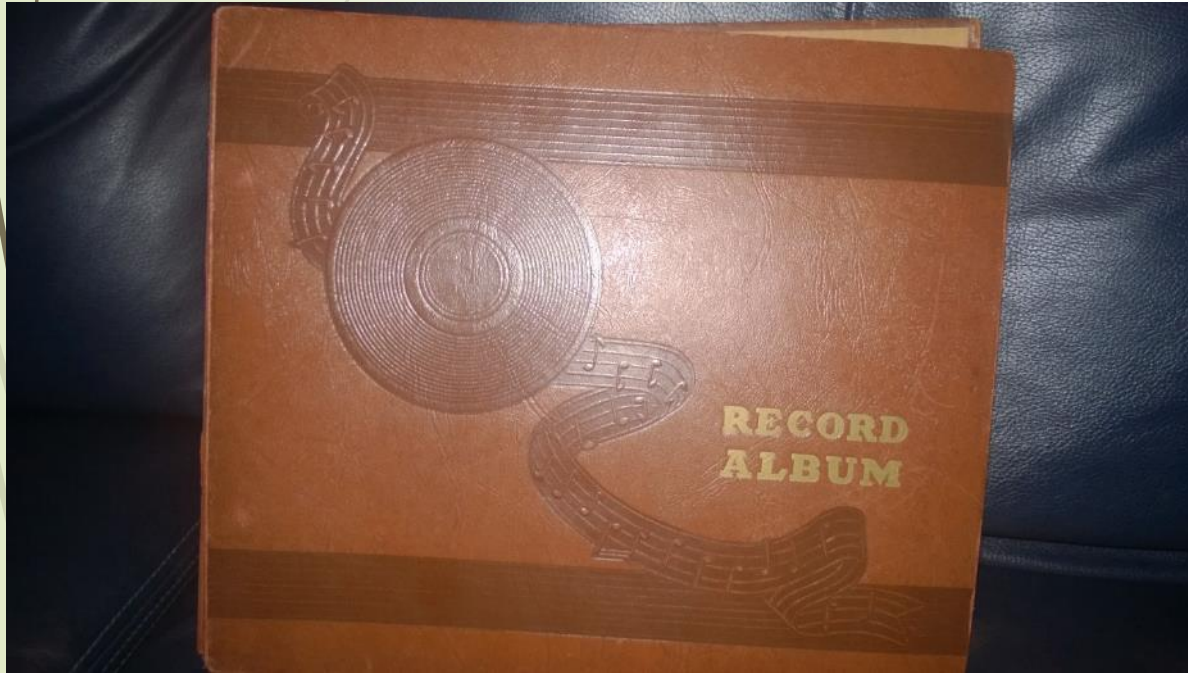
- 78 RPM records were made of shellac and could easily chip or shatter.
- Due to the weight of the tone arms on early players, the recording grooves (and thus the sound quality) would deteriorate after many plays.
- Some consumers would add to this problem by taping a coin to the tone arm to help reduce skipping.



Why Are Records Called Albums?

- Early on classical releases laid the groundwork for the origin of the term “**album**” because each side of a 78 could only hold about five minutes of music. Hour-long symphonies had to be divided into multiple discs, which were bound together in something resembling a photo album.
- The usage of the word “album” with respect to music sound recordings continues into the 21st century as another name for a musical CD, or even a full “album” download.

78 RPM Record Album That Can Hold Up to Ten Records



RECORD INDEX			
TITLE	COUNTRY	RELEASE DATE	ARTIST
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Let's Not Forget About the Radio

- ▶ Record players were expensive and there were many people who could not afford them.
- ▶ But before 1948 most households had a radio, and after the initial cost, the music was free.





Radio Made Available All Types of Music for All Kinds of Listeners

Before the 1960s in a segregated America phonograph records played on the radio were available for all to hear; it only depended on where on the tuning dial the listener chose to stop.

In a small way radio helped equalize the social classes

- Both the poor and the rich could hear the great vocalists
- White listeners could listen to black music without fear of violating any of the current day social norms.
- In the mid-1950s, particularly in large urban cities, there were many a young white teenager with a transistor radio tucked under the pillow in the wee hours listening to the transition of Black R&B into early Rock 'n' Roll. (**Just ask me.**)

Records Become Vinyl: A Format War Begins

LP (Long Playing) Album

- Developed and introduced by the Columbia Broadcasting System in 1948 to replace the decades old 78 RPM format.
- At the time Columbia's arch rival RCA Victor was the largest record label for distributing 78 rpm records.

Benefits of the LP over the 78

- Greater sound fidelity
- Weighed less
- Far less breakable
- By playing at a slower speed (33.3 RPM) a 12 inch disc could have as much as 22 minutes of music per side.

The Little Disc With The Big Hole In The Middle

The 45 RPM Record

- RCA Victor needed to compete from a sound quality perspective with the LP and so introduced in 1949 its new format.
- RCA Victor had an advantage in that they also made the record players, and could sell them at cost to entice new buyers.

Benefits: 45 over the LP

- With about 3 minutes of playing time on each side, this was the perfect length for the “pop” as well as “hillbilly” songs of the day.
- This size disc was also ideal to replace 78s in the nation’s jukeboxes, which at the time were extremely popular.

How Many Of You Still Have Your 45's?



How Many Can Relate To This?



WHEN I WAS A KID

**THIS IS
HOW WE MADE A
PLAY LIST**

8-Track Tape Arrives: Have Music Will Travel

Unintended Results

- Invented by Bill Lear in 1965 (for his line of private jets) the units were ideal for consumers to play music in their cars.
- The players were initially manufactured by a Ford Motor Co. affiliate, thus making the name “**Motor Victrola**” into **Motorola Corporation**.

Music On The Go With The Continuous Endless Loop



The Compact Cassette

Humble Beginnings

- Developed in 1963 but initially only used for dictation recording due to poor sound quality.
- Early 70s introduction of Dolby B tape noise reduction system and the ability to record “hi-fi” made the Compact Cassette a serious format for recording music.



Staying Power

- Home recording decks allowed consumers the ability to create their own “mix tapes.”
- Continuing improvements in tape quality, and other features kept the Compact Cassette a popular format into the 21st century.

The Sony Walkman

Brief History

- The Sony Walkman in 1979 ushered in a new era of portability selling over 200 million units.
- Compact size made them conducive for “music to jog by” and other outdoor activities.
- Sony’s lead helped the cassette tape outsell vinyl records for the first time in 1983.
- The popularity of the Walkman was at its highest during the period 1987-97.
- With the introduction of the Compact Disc the cassette format began to fade.
- The “Walkman” name stayed relevant for many years as an MP3 player, a phone and a portable DVD player.

- ## Music Portability Before the iPod was
- The Sony Walkman



Time Lines For The Compact Disc

From The Beginning

- ▶ In mid 1970s both Sony and Phillips were involved in the research and development of optical disc technology
- ▶ As I recall the first commercial CD's were expensive and consisted of mostly classical music
- ▶ First pop album on CD in 1982 was Billy Joel's 52nd Street
- ▶ Less than a year later players and discs were released for sale on mass levels

To Almost The End

- ▶ In 1985 Dire Straits became the first artist to sell a million CDs.
- ▶ Phillips and Sony create CD-R (recordable CD) in 1990.
- ▶ In 2008 sales for large label CDs drop 20% due to the rising popularity of music downloads.
- ▶ While still a popular format, CD sales have continued to decline each year since.

Guess How Long It Took to Rip These?





The iPod Leads The Way To The Popularity of Portable Music Players

- The iPod line leads to a portable music player explosion.
 - First released by Apple Inc. in October, 2001, the line continues today. **It's an iPhone without the phone.**
 - Apple's iTunes (and other similar software) provided the ability to transfer songs, photos, videos, and other data to this and other portable devices.
 - The advent of compressing music files allowed consumers to create large music libraries without using up big amounts of precious storage capacity.

MP3 Audio: Making Your Entire Music Collection Portable

What is an MP3?

- MP3 is an audio compression subset of the **Motion Pictures Expert Group** family of standards.
- MP3 is a process to compress to roughly 10% the size of the original audio recording file without noticeable loss of sound quality.
- Many audiophiles disregard the MP3 and instead opt for “lossless” recordings with full fidelity (such as what is found on a commercial CD).

The impact of the MP3

- Portable MP3 players which can hold thousands of songs were very popular until the advent of this feature in smartphones.
- Data music discs created at home with hundreds of MP3 song files can be played on most recent car CD players as well as **home DVD players**.
- Many modern car stereos have a USB connector allowing flash drives containing thousands of songs to be played while driving.

Digital Downloads

Replacing CD's

- ▶ According to both Nielsen and Billboard, digital music purchases for the first time in 2011 accounted for more than 50% of music sales.
- ▶ In 2012 digital sales were up 8.4% from the previous year, while physical CD album sales registered a 5% decline.
- ▶ iTunes store, Amazon Music, and others flourished replacing purchasing music from brick and mortar locations.

Benefits

- ▶ Purchasing only the songs you want while not ending up with tunes you rarely play that often happens when buying a CD.
- ▶ Digital downloads are more economical as you pay for only the songs you want.
- ▶ Typically you can listen to a 30 second clip of a song before deciding if you want to make a purchase.
- ▶ New Artists can showcase their work without the need for a full album.



Is Your Music In The Clouds?

Advantages of a Cloud Music Service

- ▶ You can upload your entire music collection
- ▶ Often the service will match with a higher quality version of your music
- ▶ Your music is available to you on a number (typically 5) of home and portable devices.

Examples of Music Services include:

- ▶ Google Music (best for Android phone and tablet users)
- ▶ Amazon Cloud (CD purchases include downloadable mp3 file)
- ▶ iTunes Match (best for users of Apple products)
- ▶ Groove music from Microsoft for Windows 10 users (has replaced Xbox Music).

Recap of Online Music Services

Online Streaming Services


(You Rent The Music)

- Typically provide two levels of services:
 - **Free** where you choose genre or the artist you like, and the service chooses what songs to play with limitations on how many can be skipped each hour.
 - **Subscription** where for about \$10 per month you choose the genre or artist, and then create specific song playlists to hear on multiple (but a limited number of) devices.

Online Music Stores

(You Own The Music)

- Offers the ability to purchase and download music to save on your computers and other devices.
 - Individual song prices can range from 99 cents to \$1.99.
 - Not all stores offer highest quality downloads, and none offer all the music ever recorded.



The More Popular Online Music Services

(Use Wikipedia.org for current offerings)

Online Streaming Services

Google Play

Pandora

Rhapsody

Spotify

Groove Music

Slacker Radio

Songza

Apple Music

Tidal (new service costs more but offers highest quality sound)

Online Music Stores

Amazon MP3

Google Play

iTunes Store

Rhapsody

Groove Music



Music Streaming Services

Advantages

See who else recorded a favorite song

See what other songs a favorite artist recorded

Provides an introduction to new artists that otherwise you might never hear

Access to millions of recorded music songs

Disadvantages

Free services have limitations on the music you can hear.

Need an internet connection.

When not using Wi-Fi your monthly data allotment is being used.



Millennials Love Music Streaming

Younger music lovers have moved away from purchasing and collecting music media (CD and digital downloads)

They are instead “renting” their music from these on-line services which provide a form of personalized internet radio.

By creating their own specialized “playlists” they can sort their music by genre, tempo, artist, etc. and have so much more available to listen to.

Major benefits include no need to worry about storage issues, damaging a disc, theft, etc.

Immediate Future of Music Listening

- Digital downloads continue to fall while free and paid music streaming revenue keep growing according to recent news reports by the Recording Industry Association of America.
- As streaming music subscriptions rise, digital music sales are declining.
 - If you have a music streaming service do you really need to buy a digital album?



Question: Can you still be considered a collector if you do not buy the music?

Yes, because

- ▶ using “playlists” you still organize your music by genre, artist, and other categories just as someone who physically owns the media.
- ▶ you take the same care, maybe more, with keeping your music organized.
- ▶ with playlists you have a “collection” of the music you care about.

No, because

- ▶ you don't own the media as you do with CDs, vinyl records, and even downloads.
- ▶ due to digital rights protections, you are not able to copy the music to play elsewhere.
- ▶ the word “collector” implies that you own something, while paying a monthly fee infers you are renting.



Are LP's Taking Us Back To The Future?

- In the first half of 2014, sales of vinyl records were 4 million, compared with 2.9 million for the first half of 2013, an increase of almost 40 percent.
- At the same time, total sales of CDs and digital albums in the U.S. were down almost 15 percent to 121 million units.
- Despite vinyl's double-digit growth, it makes up only 3 percent of total album sales.

Are LP's Taking Us Back To The Future?

Something Old



Something New



You Can Have Your Cake And Eat It Too

- Today's modern phonographs connect to standard RCA inputs (red and white) without the need for the higher amplification "phono" connection that was used on older receivers.
- You can purchase a turntable with a USB cable which will allow you to connect it to your computer and record the songs in real time as MP3 files.
- Many new record albums contain a one-time use code that will allow you to download for free all the songs on the album as MP3 files.



Three Services As Examples of Cloud Music

- ▶ Pandora – the free streaming service that plays the style of music you like (www.pandora.com)
- ▶ Groove Music - \$10 per month streaming service that plays the music you specify (use Groove Music App in Windows 10)
- ▶ Amazon Prime Music – free storage for 250 songs and unlimited music streaming.



Some predictions on what the next decade will be like for music listening?

- ▶ Streaming will continue to expand as the younger generation moves away from physical recordings and becomes completely satisfied with on-line streaming while letting someone else worry about storage issues.
- ▶ For those that appreciate the “extras” that come with physical media such as liner notes, artist pictures, detailed track information, lyrics, etc., they will become much easier to download and keep on your computer (i.e. no more paper copies).
- ▶ Dramatic improvements in streaming sound quality with lossless replacing mp3 (but most won't be able to tell the difference).
- ▶ Devices in the home and car that will play songs from the cloud that we verbally request. The **Amazon Echo** and **Microsoft Sync** respectively already have this type of voice activated feature.

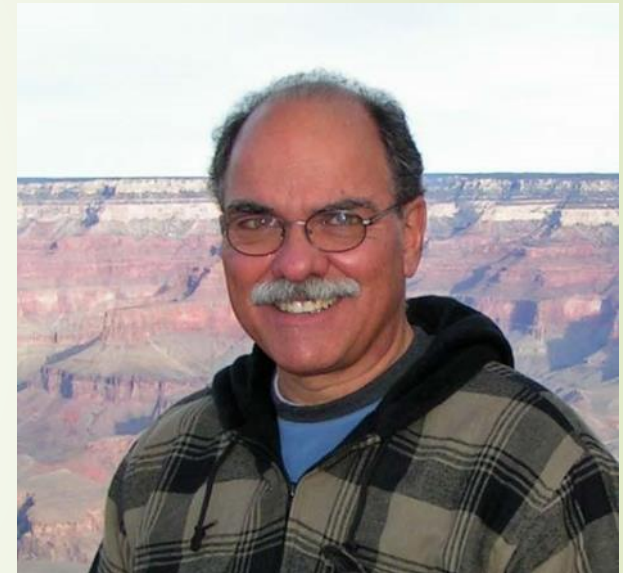
Questions?

How Technology Has Changed The Way We Listen To Music

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Ray Baxter Background Info

- ▶ Born and raised in New York City.
- ▶ Lived in Orange County, CA for 23 years before moving to Arizona.
- ▶ Was the first President of the Doo-Wop Society of Southern California which for 14 years starting in 1989 produced live quarterly stage shows featuring the R. & R. vocal groups of the 1950s and early 1960s.
- ▶ Currently
 - ▶ Director/Treasurer of Association Personal Computer User Groups
 - ▶ President of the Payson Area Computer Assn. in Payson, AZ
 - ▶ Adjunct Instructor at Gila Community College teaching three computer related courses
 - ▶ Member of RCA (Record Collectors of Arizona), a Phoenix, AZ based club that meets bi-weekly to play 45 rpm records and CDs while discussing the early days of Rock & Roll.