Gali Einav   *Editor*

Transitioning Media in a Post COVID World

Digital Transformation, Immersive Technologies, and Consumer Behavior

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To my Father

Acknowledgments

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Introduction

"Tis easy to see, hard to foresee" (Benjamin Franklin)

The world was spun into change with the onset of Covid-19. As we went into lockdown, media use and technology adoption accelerated dramatically. This book set out to examine how a global pandemic and lockdown affected various media industries, through insights and observations from academics and media professionals.

This book offers a collection of case studies, demonstrating how digital transformation, immersive technologies, and consumer behavior was transformed by the pandemic.

The first three chapters offer several points of view on consumer behavior and the media industry.

In Chap. 1, "The Covid-19 Pandemic and Consumer Media Behavior," John Carey, Janet Schiff Gallent, and Horst Stipp analyze the impact of the Covid-19 pandemic on media behavior in the United States. The chapter reviews media use patterns during the pandemic compared to the period preceding it and discusses possible post-pandemic scenarios. Special attention is paid to two developments: first, trends that existed before the pandemic and which appear to have been accelerated during it, such as streaming video on multiple devices, and, second, developments that emerged and received much attention during the pandemic, including "fake news," tele-work, and increased use of visual media services such as Zoom and Skype. It also highlights the importance of understanding the social context in which this consumer media use took place.

The chapter reviews two earlier crises that were highly disruptive to society and which impacted the use of media at that time: the flu pandemic of 1918–19 and the terrorist attack on September 11, 2001 (9/11). The authors compare patterns during these earlier crises with patterns during the Covid-19 pandemic for clues about what might happen after the pandemic.

In Chap. 2, "Media Reimagined: The Impact of Covid 19 on Digital Media Transformation," Gali Einav surveys four main media use trends that emerged during the pandemic: OTT growth, universal media reach, the explosion of gaming usage, and the wider adoption of audio-based media. The chapter suggests that new

media use trends can offer a new look at traditional media terms such as audience reach, media events, and new forms of visual content creation. Has Covid-19 contributed to the creation of a new innovative language? What are the opportunities for content creators and marketers? This chapter explores these questions and provides insights about the future of digital media in a post-Covid world.

In Chap. 3, Liraz Margalit provides a fascinating look into the question of how Covid-19 impacted the design of consumers' feelings. She argues that in order to grow and thrive in a post-Covid world, digital technology has shifted from offering a platform that is accessible, easy to use, and significantly improves customers' life to a force that designs the customers' behavior. As a result, the excessive use of digital technology has empowered the concept of behavioral design – a discipline that revolves around psychology and behavioral economics principals that aim at designing the mind of customers without their conscious awareness that they are the target of ongoing manipulations.

The next five chapters offer individual case studies that shed light on media use and digital transformation impacted by the pandemic.

In Chap. 4, Revital Hollander-Shabtai and Or Tzofi in their chapter titled "The Impact of Covid-19 on Music Innovation and the Way We Experience Music" discuss how Covid-19 changed our music consumption, experience, and education habits, and explores the characteristics of music innovation and the music startup ecosystem before and after the Covid-19 crisis. The chapter provides a case study of the unique ecosystem of music startups in Israel, known as the startup nation, which hosts one of the most fruitful startup ecosystems worldwide.

In Chap. 5, "An Agile Model of TV Format Development for a Post Covid World," Michal Ben David explores an agile model of TV format development based on the Dori Media Accelerator case study. The model is utilized to assess how key business innovation principles, which originated in the tech industry, can be applied to TV format development, drawing on the author's 30 years of experience in entertainment TV and role as consultant and designer on the project. The chapter defines some of the issues characterizing the TV format business and explores how Covid-19 has prompted changes in practices, thus offering a leaner alternative for TV corporate innovation. The chapter argues that there is a need to rethink practices and adapt a more agile TV development process for a post-Covid world.

In Chap. 6, "The Challenge of Being Lazy," Oded Napchi argues that although video content and availability and hours spent at home by consumers were at an all-time high during the pandemic, time spent on traditional television and streaming combined according to Nielsen was the lowest recorded since 2017. By employing theoretical models derived from the cognitive sciences and behavioral economics, the chapter attempts to explain this anomaly. It suggests that streaming addresses the needs of the active user but does not answer the needs of former passive TV viewers. He argues that to reverse the drop in video consumption requires a new approach to content discovery. An approach which gathers insights based on cultural evolution and network epistemology.

In Chap. 7, "The Impact of Covid 19 on the Dispersion of Immersive Technologies and Human Behavior Research and Implementation," Jonathan Giron and Noam Lemelshtrich Latar investigate the impact of Covid-19 on the scaling in use and adoption of immersive technologies in general and VR in particular. They show that significant advancements were achieved in the educational framework using immersive technologies and the elevation in collaborative work using VR, either in large quantities in conferences or smaller groups, as a collaboration framework for co-workers. The authors also discuss the changes and opportunities in behavioral research that result in the necessity to exit the lab and create a global ecosystem to supply participants with remote evaluation methodologies named remote XR. Finally, the chapter offers a discussion of conceptual changes that accrued within the clinical communities that are believed to affect the technological adaptation of immersive technologies as part of clinical work and patient treatment plans and evaluation procedures in the future.

In Chap. 8, "The Future of Museums: The Post-Pandemic Transformation of Experiences and Expectations," Cynthia Goodman provides a fascinating angle of the use of immersive technologies by looking into the transformative impact of Covid-19 on museums and other cultural institutions. These include increased digital engagement, which has been imperative for museums during the Covid-19 crisis. The chapter argues that analogous to the ramifications in many other sectors of our society, the long-term impact of this digitalization will be irreversible. This exponential shift is exemplified through the increasingly widespread embrace of virtual tours, live streams of museum events, and other online options concerning information about works in the collections as well as museum programs.

As the world is still struggling to overcome the impact of Covid-19, which will most likely linger with us for years to come, this book provides an initial look at trends emerging from the crisis. These trends are helpful to better understand consumer behavior and adapt content creation and user experience accordingly.

As predictions focused on media behavior and technological change are challenging, we hope to provide initial guidelines and steppingstones to navigate the changing landscape, raise questions, and provide much food for thought into the future of media in a post-Covid world.

It is our hope that highlighting various changes will provide a wider perspective of both the commonalities and differences of industries coping with Covid-19.

I believe that, most of all, it projects the creativity through which necessity sparks innovation.

Chapter 1
The COVID-19 Pandemic and Consumer Media Behavior

John Carey, Janet Schiff Gallent, and Horst Stipp

Abstract This chapter analyzes the impact of the COVID-19 pandemic on media behavior in the United States. It reviews media use patterns during the pandemic compared to the period preceding it and discusses possible post-pandemic scenarios. Special attention is paid to two developments: First, trends that existed before the pandemic and which appear to have been accelerated during it, such as streaming video on multiple devices both inside and outside the home. Second, the chapter examines developments that emerged and received much attention during the pandemic, including "fake news," tele-work, and increased use of visual media services such as Zoom and Skype. It also highlights the importance of understanding the social context in which this consumer media use took place.

The chapter sets the stage for analyzing media behavior before and during the COVID-19 pandemic by reviewing two earlier crises that were highly disruptive to society and which impacted the use of media at that time: the flu pandemic of 1918–1919 and the terrorist attack on September 11, 2001 (9/11). We compare patterns during these earlier crises with patterns during the COVID-19 pandemic for clues about what might happen after the pandemic.

1.1 Introduction

The goal of this chapter is to cover many, but not all, of the media used during the COVID pandemic by consumers. The emphasis is on consumer use of media and the impacts of the pandemic on consumer media consumption, though it also discusses the strategies of media organizations during the pandemic and impacts on

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them. It treats many forms of movie watching, TV and video streaming use patterns, and people-to-people media such as video calls, select forms of social media (fake news), and phone calls as well as texting. A broad range of issues is covered. For example, the section on movies covers the mini-renaissance of drive-in movie theaters, piracy, consumer outdoor "watch parties," and the impact of theater closings on distribution of movies through alternative channels such as video streaming. The treatment of TV watching and video streaming includes two case studies, one about the Olympics and a second about co-viewing in which people in different locations watch the same program or movie and communicate about it live through emails, texts, video chats, and other forms of interaction.

There are two historical case studies which provide some context for issues encountered during the COVID pandemic and clues about what might happen after the pandemic. For example, in the flu pandemic of 1918–1919, movie theaters closed, and there were concerns that the movie industry would never return to its pre-pandemic level, as happened during the COVID pandemic. During the crisis on and after 9/11, there were disruptions to cell phone service and Web access. By comparison, these services performed much better during the COVID pandemic. At the same time, the COVID pandemic was plagued by rumors and fake news, as was the case with 9/11 and the influenza pandemic of 1918–1919.

Our approach to these topics is sometimes called "Firehouse Research" (Noll, 2003), a tribute to old-time journalists who would hang out at firehouses or police precincts and go with them to the scene of the emergency so they could report on not just what happened but the rich experience of being live on-the-scene. Our analysis of consumer media use during the pandemic is evidence-based, drawing from many reliable sources of published research, for example, Pew, Nielsen, Hub Entertainment Research, Comscore, Gallup (McCarthy, 2020), US Department of Commerce, and many others (see References), but it also tries to capture the richness of the experience and the social context in which it took place. The authors were live on-the-scene during the pandemic, reporting on the facts revealed in evidence-based research and providing first-hand observations that we hope will illuminate this research.

The chapter is focused primarily on media use in the USA. An international perspective on media use during the pandemic and related policy issues is covered in other chapters of this volume and other sources, e.g., Pollock and Vakoch (2021).

1.2   Media Patterns and Impacts During Earlier Crises

Can we learn lessons from media use patterns during earlier pandemics and crises as well as media coverage of those events? There is a saying attributed to Mark Twain that "History doesn't repeat itself but it does rhyme," that is, it is rare to find events in the past, whether political, economic, or media-related, that are a perfect analogue for something we are trying to understand today, but there are

events with similarities that can inform our analysis of a new event and help us to craft more pertinent questions to ask about what is happening. Here, we assess two events for clues about how to better understand the COVID-19 pandemic: media use and impacts during the pandemic of 1918–1919 and the use of media on and after 9/11. While societies, technology, and the media were fundamentally different – not only during the flu pandemic of 1918–1919 but also on September 11, 2001 – our analysis indicates a number of parallel developments and similarities. This, in turn, suggests that there are indeed lessons for the future in these early crises.

1.2.1 The Flu Pandemic of 1918–1919

Some of the media that were available to inform citizens about the pandemic or communicate with others about it included newspapers, newsreels in movie theaters, and the telephone. Radio was in an experimental phase and not yet available to reach the public; television would not be widely available for a few decades. Many of the "social media sites" of the day, e.g., saloons, churches, and town halls, were closed for long stretches of time as part of the quarantine to slow the spread of the disease. This made media all the more important to reach the public and inform them about what was happening and how to deal with the crisis.

The pandemic of 1918–1919 was not the finest hour for the press. Many newspapers played down the seriousness of the pandemic; some likened it to a typical season of influenza (Barry, 2005). This echoed the words of many health officials and government agencies which sought to minimize what was happening and keep morale high for the war effort taking place in Europe. Ordinary citizens learned little about the disease or how to combat it from newspapers of the day, except for ads placed by the Red Cross and others about how to stay safe and slow the spread of the disease.

There was also much "fake news" (to use a modern term) spread by some politicians and bureaucrats, for example, that Germany was responsible for bringing the virus into the USA as a tactic to help defeat the allies in the war. Some newspapers carried these stories and thereby spread the fake news (Van Hartesveldt, 1992).

Movie theaters during this period carried silent movies, including newsreels, e.g., Fox Movietone News (1919–1934). However, while they showed much news footage about the war in Europe, there was very little coverage of the pandemic. Further, many movie theaters were shut down for periods of time as part of the quarantine (Stewart, 2017–18). This deprived the public not only of the entertainment provided by movies but also live vaudeville acts that often accompanied the filmed entertainment.

In 1918, approximately one in three US households had a telephone (US Department of Commerce, 1975). It was then, as now, a way for people to communicate with others, learn what is happening in the community, and receive

psychological comfort from interacting with friends, family, and neighbors. In the period preceding the pandemic, telephone companies promoted it as a form of social media, though the term was not used then.

An important characteristic of telephone service in 1918 was that virtually all calls were placed by operators, nearly all of them women, not by individuals dialing a number (automated dialing would come later). Many operators were required to do this. When the pandemic hit, many of these operators (who were cramped together at switchboards) became sick. At one point in New York City, approximately 2000 operators (one third of the workforce) were out sick (McCracken, 2020). These were skilled jobs that could not easily be replaced by temporary workers.

The telephone companies had to scramble and reduce service. They took out ads in newspapers and sent cards to subscribers urging them to use the telephone only for emergency calls. As a result, the telephone failed to live up to its potential as a robust service during the pandemic. At the same time, it highlighted how important the telephone was as a communication service and its potential to deliver vital information during crises.

What are some lessons from these experiences with media during the pandemic of 1918–1919? One is the importance of a robust and independent press, free of influence from politicians and committed to provide the information that citizens need during a time of crisis. A second lesson is for media services to plan ahead and anticipate potential disruptions to service.

There is a further question associated with the pandemic of 1918–1919. Did it create an appetite for a media technology and service that would soon follow? Radio was introduced in 1920 and available to the public shortly thereafter. Radio provided entertainment in the home that previously did not exist (especially vaudeville acts, which were common on early radio) and news that could be delivered instantly. It was adopted rapidly. Within 9 years, 50 percent of US households had a radio (Carey & Elton, 2010). Did the pandemic foster an appetite for radio? While this can't be answered definitively, the argument can be made that it did.

1.2.2   *Media Use and Communication Patterns on 9/11 (September 11, 2001)*

The terrorist attack on September 11, 2001, provides a case study of how people use television, radio, telephones, and other media during a crisis and in the weeks following. Overall, the media performed well in rapidly informing the public about the terrorist attacks and in continuing to provide information and emotional support in the days and weeks to follow.

More than half of all Americans learned about the terrorist attacks from television, one in four from another person, one in six from radio, and only one percent from the Internet (UCLA, 2002). After learning about the crisis, Americans

overwhelmingly turned to television for more information: four out of five Americans turned to TV as their main source of information on September 11 (Pew, 2002). Television provided riveting video and sound throughout the day and in the days that followed. However, there is more nuance to the communication patterns on September 11 than to simply report that television was the primary source of news. People used multiple sources of information and often used more than one medium at the same time. Many people reported that they made telephone calls or wrote e-mails while watching TV. They also watched TV in groups, more so than during their regular TV viewing prior to the crisis. Some people turned on multiple TV sets in the household, each tuned to a different channel so that they could view different perspectives about the crisis (Carey, 2003). Television watching in the weeks after September 11 continued to involve heavy viewing of news programming, but people also indicated that they wanted regular entertainment programming to return to its normal schedule shortly after September 11. They sought relief and escape from the scary world of terrorism threats that they heard on the news every day (Gallent & Stipp, 2003).

People did not turn to radio with the same intensive usage as TV on and after September 11. However, this misses two very important roles that radio played: staying in touch with the latest news outside the home, especially while driving, and helping to enhance people's moods by listening to music on the radio. People reported that they wanted to have access to news at all times. Radio served this function. Radio listeners also reported that music on the radio helped them to stay calm and feel more upbeat in a time of national crisis (Carey, 2002).

What was the role of the Web as part of the mix of media that people employed? This was the first major national crisis within the USA in which the Web was available to the public. The Web played an important but secondary role on September 11. In a Pew survey, only six percent of respondents characterized the Web as their primary news source on September 11. On the day of the attacks, people went to Web news sites in record numbers but had trouble, for a couple of hours, in accessing those sites (Porter, 2002). Later in the morning, access improved. Over time, more than 50 million Americans used the Web to gather information about the crisis (Pew, 2002).

September 11 was a major test of how well the Web could handle massive traffic. Some had predicted that the Web would melt under this strain but this was not the case. In the first couple of hours after the attack, primarily from 9:00 to 10:30, major news Web sites were overloaded and most people could not access them. However, the sites responded quickly by dropping photographs and graphics that put a strain on their servers under such heavy demand. They also added capacity where possible and borrowed servers from other groups within their organizations. For example, ABC.com borrowed server capacity from its sister Web site, ESPN, assuming correctly that fewer people would be accessing sports information that day (Kerschbaumer, 2001).

A strength and weakness of the Web is its openness to anyone who wants to place content. On and after September 11, many people spread rumors and false

information. There were examples of malicious rumors and benign but false information spread over the Web. In one case, a Middle-Eastern restaurant in Michigan was severely damaged economically by a false rumor that the employees had celebrated when they heard the news about the terrorist attack on the World Trade Center. In another case, someone Photoshopped a picture of a tourist who was supposedly standing on the observation deck of the tower just as the first airline was about to hit (the observation deck would have been closed at that time) (Zaslow, 2002).

Broadband Web access in the form of video streaming was minimal on September 11. This may be related, in part, to the low penetration of broadband in homes at the time. Approximately 9 million US households had broadband access to the Web in September 2001 compared to more than 100 million who had access to television (Carey, 2003). However, in addition to the low number of households with broadband access, video streams put a burden on the servers of news organizations, which were already strained by heavy traffic. Further, the quality of video over the broadband Web in 2001 was much lower than regular television video. In the weeks following, there was increased video streaming about the crisis to the desktops of office workers who had greater access to the broadband Web (and less access to television) compared to people at home.

Telephone landlines or wired phones held up remarkably well on 9/11 given the incredible demand for service (over 400 million calls were attempted on September 11 in the New York area alone). A record number of long-distance calls were handled successfully that day. However, approximately one third of those calls did not go through or experienced problems (Hayes, 2001). When people could not get through, many used email or pagers as a backup (Garrett, 2019). Cell phones were a relatively new service: only 45 percent of Americans had a cell phone. Cell phone service was less able to handle demand, especially in lower Manhattan where many cell phone towers were destroyed during the attack. Nonetheless, for those who had a cell phone and could get through, it was invaluable. Cell phones provided mobile communication so that people could reach friends, family, and emergency service providers from outside the home or office.

What could have been foreseen about the future based on the media experiences on and after 9/11? One clue lies in the incredible demand for video. As much video as was provided by television, people wanted even more. This suggests that people would want broadband video when it became robust and available. A second clue was in the value of cell phones. As spotty as the service was, people found it invaluable when it did work, suggesting that it would eventually become ubiquitous – which it did. In the case of the Web, its shortcomings on 9/11 and immediately thereafter taught content and service providers that they must prepare for ad hoc heavy demand and that "publishing" (a term used at the time for making content changes in real time) was essential. Crisis experience can also give consumers new insights into how they can use new technologies, and it can redefine the role of existing media in their lives, as it did on and after 9/11.

1.3 Media Use and Communication Patterns During the COVID-19 Pandemic

1.3.1 Time Use

A reasonable starting point to understand changes in media use from the pre-pandemic period to during the pandemic is to examine general and media-related changes captured by the Time Use Survey conducted by the US Bureau of Labor Statistics. In Table 1.1, it shows results from May to December in 2019 and during the same period in 2020. Some activities changed little or not at all such as the time occupied by eating and drinking or reading. There was an increase in time spent alone and watching TV (these may be related) as well as caring for children by those who had ones, presumably because their children were at home for longer periods. There was a sharp decline in time spent outside the household with others.

The most dramatic finding (not shown in Table 1.1) was the change by those working at home. In May to December 2019, 22.4 percent worked at home; in the same period during 2020, 41.7 percent worked from home, a percentage that almost doubled.

What follows is a review of specific media sectors.

1.3.2 TV Watching and Video Streaming

There were many patterns of growth and decline in TV watching and video streaming during the pandemic. Some patterns were clearly affected by the pandemic; others appear to be a continuation of trends that existed prior to the pandemic. A number of data sources confirm the findings from the American Time Use Survey

Table 1.1 Average time spent in hours per day by those 15 and older

	May to December 2019	May to December 2020
Eating and drinking	1.1	1.1
Caring for children[a]	1.9	2.4
Socializing and communicating	0.7	0.5
Reading	0.3	0.3
Playing games and using computers for leisure	0.5	0.6
Watching TV	2.7	3.1
Time spent alone	6.1	7.0
Time spent with others in household	4.5	4.8
Time spent with others outside household	4.4	2.9

Source: American Time Use Survey (U.S. Bureau of Labor Statistics, 2021)
[a] By those with children

regarding TV viewing. There was a significant increase in television viewing during the early stages of the pandemic, particularly in April and May when lockdowns were widespread. During the months following this initial surge, viewing levels remained elevated but only slightly (Nielsen, 2021; Tice, 2021b). Of interest, data from Western Europe showed similar patterns (Haddad et al., 2021).

Subscribers to traditional pay TV channels on cable, satellite, and telco video services declined during the pandemic. However, this was a continuation of a trend that was in place for a number of years (Leichtman, 2021). It could be argued that traditional pay TV channels should have benefitted from the surge in video viewing that benefitted streaming services. While subscribers for these services declined, some content areas on pay TV saw increases in viewing. For example, viewership of cable news services such as Fox, CNN, and MSNBC increased sharply in 2020 compared to 2019 (Pew, 2021) but then returned to viewership levels below the 2020 peak. The surge lasted about 5 months, beginning when viewers first learned about the pandemic. Perhaps people were keen to learn all they could early on during the pandemic, but then some grew weary of all the bad news. Live sports also enjoyed an initial increase but then declined because the number of live sports events declined. Some games were cancelled because of the pandemic, and the absence of live crowds at many games took away some of the excitement of watching from home.

Video streaming had been on an upward trend before the pandemic. It suddenly surged early in the pandemic and then returned to levels higher than pre-pandemic but below the peak. During the second half of 2020, streaming continued to increase but at a more moderate pace (Nielsen, 2021). One group continued with the highly elevated viewing: people over 55 (Nielsen, 2021). Many in this group were retired and had more time to stream video. That group has also shown more interest in news from traditional TV and cable news sources on TV sets and computers; many young people get news from social media on mobile devices (Kalogeropoulis, 2019).

Overall, there were 124 billion streams in 2020 compared to 95 billion in 2019, an increase of 31 percent. This was aided by high penetration of broadband (over 100 million households) and significant adoption of smart TVs. By early 2021, 70 percent of households had a smart TV (Tice, 2021b). This made it easier for those households to stream video. Video streaming subscriptions grew by 47 million in 2020 and an estimated 50 million in 2021 for a total estimated streaming video subscriptions of 385 million by the end of 2021 (UBS, cited by Munson, 2021). This benefitted video streaming services (such as Netflix, Amazon Prime, and Disney Plus). It also prompted media companies to offer more steaming services – both ad-free subscriptions and free ad-supported services. Further helping them grow was the release of first-run movies to video streaming services simultaneous to release in movie theaters or in place of theatrical release, with so many movie theaters closed because of the pandemic. Associated with these trends, the number of active video sources such as Sling, Hulu, Peacock, etc., in an average video streaming household went from 3.7 in 2019 to 5.7 in 2021, an increase of more than 50 percent (Tice, 2021b).

Two events illustrate some of the many influences of the pandemic on TV watching and video streaming: the Tokyo Olympics and co-viewing. The 2020 Olympics, held in August 2021, provides an example of positive and negative impacts of the pandemic on the consumer media experience at the same time and for the same event. On the positive side, consumers had available to them an unprecedented amount of coverage – a record 7000 hours of coverage across several platforms including broadcast, cable, satellite, and streaming. They watched in large numbers – 150 million Americans watched the coverage of the Tokyo Olympics. It was the second most watched show of the 2020–2021 TV season. Viewers streamed a record 5.5 billion minutes of events (Hsu, 2021). At the same time, the pandemic threw a number of hurdles into the coverage for viewers. First, the ratings were lower than the 2016 Rio Olympics. Some of the explanation for this is that linear TV viewings on both cable and broadcast were declining over the year. Also, the 13-hour time difference meant that some key events were difficult to watch live and viewers could be exposed to spoilers about some of the results. Further, some of the big stars on the US team did not perform well, and a number of athletes came down with COVID and had to withdraw. Though NBC did a reasonably good job of covering events with no one in the stands, it reduced the excitement that comes with fans cheering. Even the coverage of family members cheering on was reduced because they were back in the USA, not in Tokyo. The record amount of coverage also had a downside; some viewers indicated that they had difficulty finding the live sporting events they wanted to watch; others may have been disappointed to find some of the big Olympic events behind a firewall on NBC Universal's streaming service Peacock (Deegans, 2021).

As noted earlier, more people were home alone during the pandemic, and people spent less time outside the home with non-household members compared to the period before the pandemic. One of the ways people responded to this deprivation in social contacts was through co-viewing of TV programs, movies, and other streaming videos on their TV sets, computers, or mobile devices. In co-viewing, people in different locations watch the same content and can interact with each other via texting, audio calls, or video chats. Co-viewing existed before the pandemic, but many more co-viewing apps were launched after the pandemic started, and more video streaming services offered and promoted them (Yao, 2020). These included Amazon Watch Party, Disney+ Group Watch, Discord, and Zoom. More than 20 percent of viewers reported using them. However, there were notable age differences with 40 percent of viewers age 16–34 saying they have used them but only 3 percent of people over 55 (Tice, 2021a).

A related activity that appears to have become more popular during the pandemic is group TV and video streaming parties or hangouts outdoors. These existed before the pandemic, but it was typically for a special event, e.g., outdoor parties to watch the Super Bowl. While data is scarce, anecdotally they appear to have been more common for general viewing after the pandemic began and not just for special events. Some groups even used fire pits to keep the group members warm in cold weather while practicing social distancing. Indirect evidence of this is the number of electronics stores and online e-commerce sites that offer complete packages to

support outdoor watch parties. The CDC (US Government Center for Disease Control and Prevention) has even issued guidelines about how to conduct group outdoor watch parties safely (Dreier, 2021).

1.3.3   Movies

The pandemic had a major impact on the theatrical market for movies (indoor movie theaters). Fortunately, the movie industry was able to make up some of the loss through digital distribution of movies such as video-on-demand (VOD), subscription video-on-demand (SVOD), and other forms of streaming. But this also had a dark cloud in the form of increased piracy of first-run motion pictures.

It is dramatic to compare the movie industry in 2019 pre-pandemic to 2020 when the pandemic was first recognized. Admissions to movie theaters in North America declined from 1.24 billion tickets sold in 2019 to 0.24 billion sold in 2020. On a weekly basis, the average number of admissions went from 23.8 million in 2019 to 4.3 million in 2020. Revenue from admissions declined from $11.4 billion to $ 2.2 billion (Comscore Box Office Essentials, cited in MPA 2021). In addition, fewer films were released and fewer new productions started. Sales and rentals of physical media such as DVDs declined from $ 4.7 billion to $ 3.5 billion, although this continued a downward trend that had been in place for a number of years.

In March of 2020, when it was first clear that COVID-19 was a major threat, nearly all movie theaters closed. Early in May, some reopened and by June approximately 30 percent of movie theaters were operating. This continued till November when there was a surge in COVID and many of these movie theaters closed again (MPA, 2021). The movie industry's strategy was to go digital, a process that had been growing for a number of years but which now accelerated dramatically. Many movies – including brand new "theatricals" – were now available in digital form from legal online sites simultaneous with or even before release in movie theaters. Consumers reacted positively. A survey by Hub Entertainment Research in mid-2020 found that one in five people said they had paid for a first-run movie on a legal streaming site; by mid-2021 it was one third (Hub, 2021).

A highlight for movie-going during the pandemic has been a comeback for drive-in movie theaters. There was a modest upswing in number of theaters, a dramatic rise in share of movie admissions vis-à-vis indoor movie theaters and a psychological uplift for many movie fans who could enjoy a relatively safe place for out-of-home entertainment.

Drive-in movie theaters have a long history. The first official drive-in theater was launched in 1933 in Camden, NJ, though there was an earlier history of random showings of silent films on beaches and in parks during the 1910s. They grew moderately, mostly in rural areas, reaching a peak just under 5000 in the late 1950s (Reid, 2008), only to decline to about 300 in 2019. Competition from TV, VHS movies, and multiplexes reduced their numbers. The pandemic brought a modest renaissance to drive-ins as so many indoor movie theaters closed. In mid-2020,

more than 20 percent of movie theaters in operation were drive-ins. Further, from March to August of that year, drive-ins represented 85 percent of box office revenue, versus 2.9 percent of revenue in the same period of 2019 (Comscore, cited in Wallace, 2021). This was a boost if not a savior for the movie theater industry and a psychological lift for movie fans.

1.3.4   Consumer Communications Media

There is a broad range of media in which consumers create content or are active participants in exchanges with others. This differs from media discussed earlier in this chapter in which consumers generally experience media created by professionals. A selection of these is reviewed below, along with how they were affected by the pandemic.

- Visual communication systems. There are dozens of visual communication systems that link people in disparate locations, including Zoom, Skype, Google Meetings, Microsoft Teams, and LogMeIn, among many others. Uses for these systems include:

  - Tele-health linking a doctor or nurse practitioner with patients.
  - Tele-education linking teachers and students or groups of students together.
  - Tele-work linking workers in a company or organization.
  - Tele-communication linking friends, family members, and people with common interests for social interactions, emotional support, or fun.
  - All of these services existed before the pandemic. However, use of these services exploded during the pandemic (Patel et al., 2021). In England, there was a similar "Zoom boom" as in the USA (Kleinman, 2021).

- There have been many positive impacts of these services during the pandemic: distance between people is less of an issue (grandma can be across town or in Norway), more people can participate than is generally available in a physical space, and, most people have the equipment necessary to participate. For the most part, they require little or no training, though some people (who appear in deep shadows or at extreme angles during these sessions) could use a little coaching. However, there are downsides. Use of these systems promised workers less commuting time and more flexible work hours. However, some report that their work day has been extended well beyond what it would be in an office. Also, there have been reports of "Zoom fatigue" – long stretches of staring at a screen tires some people (Bailenson, 2020).
- Fake News on Social Media. "Fake news" may be a new term, but, as we discussed in the context of earlier crises, it is not new. However, trends that fostered it on the Web for many years have created a perfect storm of fake news during and about the pandemic. What are some of these trends? They include a growing reliance on social media for news, especially by young people (Reuters, 2021);

increased skepticism about the reliability, fairness, and accuracy of traditional mass media journalism (McCarthy, 2020); and the vast number of fake accounts on social media platforms, including millions of accounts that are created by bots (Nicas, 2020). Research has also shown that people who get news from social media (approximately 20 percent of Americans get most of their news from social media) are least likely to follow the advice of experts and most likely to be exposed to made-up news (Jurkowitz & Mitchell, 2020). There is also more sharing of fake news, which is so easy to do – it just takes one click. At a time when people need accurate information, many have not been getting it, either because they don't read, listen to, or watch news from reliable sources or because they reject it.

- Fake news has many attributes that make it difficult to combat. For a start, many fake news sites mimic real news sites. Logos and specialized fonts of real news organizations are easy to copy and paste. In addition, the technology behind "deepfakes" (in which AI duplicates a real person such as a well-known journalist) is readily available (Debusmann, 2021). There are no geographic limitations for those who want to create fake news. Fake news can come from anywhere.

- The financial strain on many local news organizations has inadvertently led some to spread fake news. With fewer reporters and less oversight by professionals, some local news organizations have repurposed online material about the pandemic which has been inaccurate or misleading (Frenkel & Hsu, 2021). The story may then be picked up by other news outlets since it is coming from a legitimate organization.

- Often, a fake news story about the pandemic is attributed to an authority figure, who may be real or made up, and written with the type of sensational copy and headlines made famous by supermarket tabloids (Alba & Frenkel, 2021). Many of the stories have been aimed at poorly informed people, who cannot tell if they are true or false, and spread by them (Spring, 2021).

- Phone Calls and Texting. Already in high use before the pandemic, mobile phone calls and texting surged in use during the pandemic. Even landline calls, which had been declining for years, increased sharply during the pandemic. With many people working from home and isolated from routines of face-to-face social contacts, it is not surprising that people made more phone calls and sent more texts.

- Verizon reported that during the first month in which the pandemic was recognized, the daily average of phone calls was double the number on Mother's Day – the biggest day of the year for phone calls. Texting during this early period was eight times the number on a typical day. Also, the time of day for this activity flipped from afternoon (primarily, during the pre-pandemic period) to morning. Isolation and less travel were reflected in cell phone tower traffic, with 30 percent fewer pass-offs from one cell tower to another. With all of this heavy traffic, telephone networks held up reasonably well (Serwer, 2020). During this period, there was an increase in Internet traffic (20 to 25 percent) but not as much as telephone network traffic (33 percent) (Kang, 2020).

- Telephone calls helped people provide emotional support to each other. Texting also helped people, especially young people, to provide emotional support for each other that had been reduced with less face-to-face contact. Emotional support through phone calls took many forms, for example, a church in Louisiana that made a list of phone numbers for its 900 parishioners and called each of them regularly, something they had never done before (Kang, 2020).

- Phone calls became more important in the delivery of health services, particularly as hospitals filled up with COVID patients. Calls were a way to reach people who would be vulnerable going to a hospital for non-life-threatening care. Texting was also adopted by some health service providers, even for the delivery of care to the elderly. Health-care providers were surprised to find that many elderly patients knew how to send and receive texts. Further, many of the elderly had smart phones capable of texting but did not have the equipment to do video calls on Zoom and other visual communication systems (Millstein et al., 2021).

- Along with positive impacts of phone calls and texts during the pandemic, there were negative impacts. In general, there were many shortages of products, both industrial and consumer, during the pandemic. Some of these shortages were caused by supply chain disruptions (Goodnant & Chokshi, 2021). However, rumors spreading via phone calls, texts, and social media also contributed to shortages, particularly for consumer goods such as toilet paper, paper towels, packets of ketchup, and even feta cheese (Hanashino, 2021). In addition, there was a significant increase in attempts to scam people through phone calls and texts during the pandemic compared to the pre-pandemic period. The elderly in particular were more vulnerable to phone call scams (Laudon, 2020).

1.4   Discussion

Looking across a range of media, the most common pattern during the pandemic was for consumer use of media to spike for a few months after the pandemic began and then to decline to a level slightly above or at the pre-pandemic level. Video streaming usage was different. A trend that was in place before the pandemic – increased viewing of video streams by consumers – accelerated once the pandemic began. That acceleration was supported by the strong adoption of smart TVs during the pandemic, the availability and addition of many new streaming services, and robust offerings of new content such as theatrical movies.

Some other pre-pandemic trends, e.g., a decline in subscriptions to pay TV providers such as cable, satellite, and telco TV services, continued. Putting these elements together suggests that video streaming is poised to become the mainstream way that video is delivered sometime in the 2020s, just as broadcasting was the mainstream delivery system in the 1950s through the 1970s and pay TV services such as cable (and later satellite and telco TV systems) were, collectively, the mainstream delivery system from the 1980s through the arrival of the pandemic. A vote

of confidence in video streaming can be seen in the participation of nearly all broadcast and cable networks, who stream content over broadband along with their more traditional video distribution. It is also a safe bet that mobile phones will be an increasingly important component of video consumption, especially for young people. What is unclear is whether the number of video streaming services will continue to proliferate and whether some form of consolidation or aggregation will occur.

Some media use affected by the pandemic, e.g., a decline in watching live sports during the height of the pandemic, appears to have been a result of a decline in availability of live sporting events during this period and the absence of fans in stadiums and arenas, which took away some of the excitement of watching. Viewership increased in 2021 as more live sports (and fans in stadiums) returned. Indoor theater attendance declined sharply during the pandemic as many movie theaters closed. This benefited another movie industry group – drive-in movie theaters – which saw a sharp increase in attendance. Some have predicted the end of the movie industry (Gura, 2021). Caution may be appropriate here. The death of the movie industry has been predicted many times before, for example, during the 1918–1919 pandemic when many movie theaters closed, during the 1950s when television threatened movie theater attendance, during the 1970s and 1980s with the rise of movies on VHS tapes and DVDs (Menand, 2005), and again in the 2010s with digital distribution of movies over broadband. The movie industry survived all of these threats and will likely survive the pandemic, though it is unclear if they will return to pre-pandemic levels. Further, the distribution mix for movies may change. For example, studios have found that many people are willing to pay for watching first-run movies at home.

In the case of people-to-people media such as Zoom calls, it is likely that some uses of these media will decline from pandemic levels as people return to more face-to-face contacts, but other aspects may be integrated on a permanent basis, for example, greater use of video calls in health care and more tele-work from home compared to pre-pandemic levels. As during previous crisis periods we examined, this pandemic increased the desire for news, resulting in more news coverage and more consumption of news. Also, the widely discussed spread of misinformation during the current pandemic does not seem to be an entirely new phenomenon.

History suggests that some media appetites fostered during the pandemic will lead to adoption of new media technologies or services that are not yet available or have just been introduced, just as the pandemic of 1918–1919 appears to have fostered an appetite for radio that was introduced a few years later. There are many candidates for future successful technologies and services. However, these are best seen with hindsight, not foresight. Clues may be found more in the social and emotional changes in consumers than in reading technological tea leaves, as noted below.

While data about consumer media use during the pandemic is important and useful, it is just as important to understand the social context that led to changes and may lead to future changes. Isolation led to many changes. Media helped to occupy people's time, provided out-of-home entertainment within households, and linked people to family members they could not visit. Further, events like outdoor watch

parties let people share media experiences with others while maintaining social distance. In addition, consumers learned to appreciate and value many things they may have taken for granted before the pandemic such as enjoying the communal experience of sharing a film in a movie theater with others or watching a sporting event on TV as fans in the stands cheer loudly, hold up banners, and wear funny hats. Understanding this social side of consumer media use during the pandemic may be the most important lesson to learn and provide guidance for the future.

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Chapter 2
Media Reimagined: The Impact of COVID-19 on Digital Media Transformation

Gali Einav

Abstract The chapter surveys four main media use trends that emerged during the pandemic: OTT growth, universal media reach, the explosion of gaming usage, and the wider adoption of audio-based media. The chapter suggests that new media use trends can offer a new look at traditional media terms such as audience reach, media events, and new forms of visual content creation. Has COVID-19 contributed to the creation of a new innovative language? What are the opportunities for content creators and marketers? This chapter explores these questions and provides insights about the future of digital media in a post-COVID world.
COVID-19 accelerated digital media adoption across many domains. This chapter surveys four main trends of this transformation: OTT growth, universal media reach, the explosion of gaming usage, and the wider adoption of audio-based media. The chapter suggests that new media use trends can offer a new look at traditional media terms such as audience reach, media events, and new forms of visual content creation. Has COVID-19 contributed to the creation of a new innovative language? What are the opportunities for content creators and marketers? This chapter explores these questions and provides insights about the future of digital media in a post-COVID world.

2.1 Digital Transformation

At the onset of the pandemic, the media landscape was already undergoing a fundamental realignment. The velocity of technology adoption was moving at historic speed, driven by our Internet-addled lifestyles. For example, the telephone, introduced by Alexander Graham Bell in 1876, required 75 years to achieve 50 million

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users. Contrast that with "Chewbacca Mom,"[1] a video posted to Facebook on May 19, 2016, by 37-year-old Candace Payne, which surpassed 50 million views within 24 hours. By 2020, time spent on social media represented 6.8 years in a life span.[2]

The battle for attention had escalated with a myriad of diversions available across devices, including Facebook, WhatsApp, TikTok, Instagram, and many more (Jenick, 2019). Changes in media use habits had been led mostly by "digital natives" (Egnatoff and Tapscott 1998; Tapscott, 2009; Prensky, 2001) particularly "Generation Z".[3]

The upheaval of March 2020, when the world went into lockdown, saw the convergence of work and home. As most activities, from education to exercise to home delivery migrated online, all generations, to a certain extent, transformed from "digital first" to "digital only."

As early as April 2020, one month into the pandemic, an immediate spike in time spent on online digital media was noted[4]: 57% reported watching more shows and films on streaming services, 47% spent more time on social media, and 39% listened to more streaming music services. Six months later, in October 2020, daily time online reached 6 hours and 55 minutes. Between October 2019 and October 2020, the number of Internet users grew by 7.4% to 321 million, and the number of active social media users rose 12.3% to 453 million people worldwide (Hootsuite, 2020). Nielsen's COVID-19 evaluation report showed that time spent on IOS smartphone and tablets rose from 448 billion minutes in January 2020 to 590 billion minutes in December 2020.[5]

Looking at digital media adoption trends, this chapter highlights four main observations: The pandemic accelerated the use of over-the-top (OTT) video streaming, media reach was redefined at truly global scale, gaming as a phenomenon broadened its appeal to reach mega audiences, and more media moved to audio. The chapter also argues that new forms of visual language, including TikTok, found mainstream appeal during COVID.[6]

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[1] https://www.youtube.com/watch?v=y3yRv5Jg5TI

[2] https://www.broadbandsearch.net/blog/average-daily-time-on-social-media

[3] Pew Internet revised generation, from January 2019, defines Gen Z as those born after 1997. https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/

[4] Based on percentage of Internet users 16–64 in select countries who report spending more time on the following.

[5] https://www.nielsen.com/us/en/insights/article/2020/covid-19-tracking-the-impact-on-media-consumption/

[6] This chapter examined the first year of the COVID-19 pandemic – between March 2019 and July 2020.

2.2   The Year of OTT and "Cord Cutting"

The trend of "cord cutting", i.e., consumers choosing to discontinue their cable or satellite-based subscriptions, hit record numbers during the pandemic with 23% of US households canceling their pay TV subscriptions (Pressman, 2021). Traditional television viewing also declined during the pandemic. According to Nielsen's Total Audience report 2021, average time spent on live and shifted TV fell from 3.56 hours per day in Q3 2019 to 3.41 hours in Q3 2020[7] (Lafayette, 2021). On the other hand, there was a huge increase in US digital audiences. Connected TV and OTT streaming adoption rose 37%. Home TV and movie watching rose 85%. Set top box and stick OTT[8] streaming rose 58% (Gray, 2020; Jenick, 2019). According to Comscore, between April 2019 and April 2020, there was an increase of 5.2 million homes who used OTT and an increase of 17 viewing hours during the same month[9] (Muldrow, 2020). During the pandemic changes in media usage transcended "Generation Z." The fastest adoption of streaming services was among older demographic groups. Consumers aged 50–64 increased their streaming use from 50% to 60%, while use in seniors 65+ with streaming television surged from 35% to nearly half of the entire demographic (Yougov, 2021).

The pandemic accelerated the adoption and proliferation of new streaming platforms and broadened the reach of existing players. For example, during the pandemic, Netflix doubled the number of new subscribers, adding 26 million subscribers vs 12 million in 2019; Disney+, launched in November 2019, grew from 26.5 million subscribers in Q1 2020 to 94.9 million paid subscribers in Q1 2021[10] (Walsh, 2020). Larger audiences spurred the streaming TV services to ramp up investment in new content. Netflix spent $16 billion in 2020 for new programming to entertain its 203 million subscribers. Amazon Prime invested $7B for their 150 million subscribers, while Disney+ allocated $1.75B to obtain new shows for their 95 million subscribers (Klebnikov, 2020).

2.3   Media Reach Redefined

The increased use of social media and streaming video redefined media reach from national to global and showed a migration of digital media adoption, led by Gen Z, to older generations. In the case of broadcast, cable, and satellite television,

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[7] This is a continuation of the trend. In Q3 2018, time spent was 4.13 hours per day, based on US population.

[8] Stick OTT refers to streaming devices that are used to deliver video content. Examples include Chromecast, Amazon Fire, and Roku Stick.

[9] https://www.comscore.com/Insights/Press-Releases/2020/6/Comscore-Releases-2020-State-of-OTT-Report

[10] https://www.statista.com/topics/842/netflix/

audience reach is confined to a particular territory. This may cover a specific country or region, funded by local subscriptions and local advertising. The content reach could be expanded through incremental distribution deals in new regions and territories. Contrast that with advertising-based social networks such as YouTube and Facebook, reaching truly mega audiences. According to internal data,[11] Facebook had 2.8 billion monthly active users (MAUs) in December 2020, up 12% over 2019; YouTube had 2.1 billion MAUs in December 2020, without the need to secure territory-specific distribution contracts. Popular streaming services were able to reach truly global audiences. At Netflix, shows like "Tiger King" and "Queen's Gambit" reached audiences of more than 65 million and 62 million viewers, respectively (Litlleton, 2020; Nunan, 2020). In total, these services achieved unprecedented growth and redefined the concept of media reach.

Social media use grew dramatically during the pandemic. Every day during 2020, 1.3 million new users joined social media. As of July 2021, 51% of the global online population, or 3.96 billion people, were active social media users (Hootsuite, 2021).[12]

TikTok saw the fastest growth in the category. In January 2021, just three and a half years after its international launch, TikTok surpassed 689 million active users, making it the world's seventh largest platform.[13] In 2020, more than 2 billion people downloaded the application. In comparison, Instagram needed 6 years to equal that number of monthly active users, while Facebook required 4. One reason for this meteoric growth is the additional time made available for online video creation while schools and other institutions were shuttered. TikTok's audience shifted from mainly Gen Z girls to a balanced distribution across all adult age groups. Statista reports that in March 2021, one quarter of TikTok users were between the ages of 10 and 19, 22.4% between 20 and 29, 21.7% between 30 and 39, 20.3% between 40 and 49, and 11% over 50[14].

This shift to the mainstream manifested in the rise of a new kind of social media star.

For example, one leading content creator on TikTok, "Doggface208," is a 38-year-old Wyoming father named Nathan Apodaca. He became a TikTok sensation with a clip of him skateboarding and drinking Ocean Spray cranberry juice while lip-syncing the Fleetwood Mac song "Dreams." The video racked up more than six million followers and over 15 million "likes" (Romero, 2020). Apodaca was able to construct, and monetize, his own brand. From a marketing perspective,

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[11] https://investor.fb.com/investor-news/press-release-details/2021/Facebook-Reports-Fourth-Quarter-and-Full-Year-2020-Results/default.aspx#:~:text=Facebook%20daily%20active%20users%20(DAUs,%25%20year%2Dover%2Dyear

[12] Source: Hootsuite Press report retrieved from: https://www.globenewswire.com/en/news-release/2021/01/27/2165130/0/en/New-report-finds-1-3-million-new-users-joined-social-media-every-day-during-2020-15-new-users-every-second.html

[13] Not including Chinese ByteDance users TikTok's parent company (689 million). Together, TikTok and Douyin (ByteDance) have 1.29 billion active users worldwide.

[14] https://www.statista.com/statistics/1095186/tiktok-us-users-age/

this also benefited Fleetwood Mac, which saw a return to the pop charts, and Ocean Spray, which rewarded Nathan with a new van and an ongoing spokesperson role. The clip illuminated new cross-marketing opportunities for brands to engage with wider audiences across generations.

2.4 Gaming Skyrockets Worldwide

2020 was a year of dizzying growth for video games. Similar to social networks and TikTok, during COVID, the number of active gamers grew dramatically, migrating from Gen Z to older demographics, resulting in mega audiences engaged in creative problem-solving, immersion, and group collaboration.

One success story is Roblox, a platform released in 2006 that supports a diverse universe of third-party games. In 2020, Roblox reached 200 million monthly active users *including half* of the US population under 18 (Lyles, 2020). These mega audiences respond to immersive multimedia experiences, including music. In a first of its kind, Lil Nas X held four virtual concerts in November 2020 and garnered 33 million viewers/attendees (Kastrenakes, 2020). This mega audience would have not been attainable in a traditional concert tour. In March 2021, the most popular game on Roblox was pet simulator Adopt Me! with over 20.5 billion visits.

Another example is Twitch, a live broadcast gaming platform that skews heavily male (65%) and under 35 (73%) (Statista, 2020). Twitch was launched in 2011 as a live streaming service focused on gaming and e-sports, allowing users to stream and chat interactively globally. Within its first year, Twitch reached 3.2 million users per month. In 2020, it reached 140 million monthly active users. At any given time, 127,000 live Twitch broadcasts are occurring. In the aggregate, in 2020 over 1 trillion minutes of video were viewed on Twitch, roughly 1.54 billion hours each month. League of Legends, the most watched title on Twitch, accumulated 35.67 billion watch hours in 2020 (Dean, 2021).[15] Both Roblox and Twitch demonstrate the growing trend of a mega global audience built around a collaborative gaming theme.

2.5 Media Moving to Our Ears: From Podcasts to Audio-Based Social Networks

Media migrated to our ears during the pandemic. In a single year, US average podcast listener penetration leaped from 39% in 2019 to 43% in 2020 rising 61% during 2020 (Nielsen, 2021). Podcasts are perceived as an intimate media experience and were found most popular at home between 7:00 pm and midnight. Young children

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[15] In 2014, Twitch was purchased by Amazon for $970 million dollars.

were particularly interested in this format. Eighty-nine percent of children who listen to podcasts were under the age of 9 (YouGov, 2021).

Wall Street noticed the growing prominence of podcasts, notching several blockbuster acquisitions. Notable examples were Amazon's purchase of Wondery, Facebook's purchase of Vox, and Spotify's acquisitions of Gimlet and Megaphone, which offers technology for podcast publishers and advertisers seeking targeted slots on podcasts. These mergers will likely accelerate podcast reach and can potentially increase synergy. For example, Amazon podcasts may drive more Prime subscriptions or combine with original TV programming (Galloway, 2020). One historical analogy is the push ITV received with the BBC in the early aughts requiring all TV show concepts to include a corresponding online version (Einav, 2004).

One breakout superstar during the pandemic was Clubhouse. Clubhouse was officially launched in April 2020 as an invitation-only, audio-based social network. The user base quadrupled from 0.5 million in December 2020 to two million in January 2021. It then quintupled to ten million by February 2021.[16] Clubhouse represented not only a shift to audio but a new form of collaborative storytelling during a period of social dislocation. The intimate nature of audio-based discussion proved a draw for those spending more time at home and experiencing the fatigue of video-based communication such as Zoom.

One sign of success is competition. By that measure, the media world took notice of live audio's budding popularity. During June 2021, Facebook launched Clubhouse-like "Live Audio Rooms," Spotify introduced Greenroom, and Discord debuted Stage Channels.[17]

2.6   Media Reimagined

COVID-19 condensed a decade of digital transformation into 18 months. The niche media habits of Gen Z have now migrated to older demographics.

This chapter surveyed four main trends of this transformation: OTT growth, universal media reach, the explosion of gaming usage, and the wider adoption of audio-based media. Will these trends observed during the first year of COVID-19 continue to grow? Will the popularity of platforms like Twitch, Roblox, Clubhouse, and Netflix sustain? It is difficult to predict technology adoption. It seems likely that as the world emerges from lockdowns, the surge may become more incremental. For example, Netflix has already seen a plateau of subscriber growth (Walsh, 2020). However, even if adoption stabilizes, the existing mega global audiences, growth in collaborative gaming, and OTT streaming will likely continue to dominate the media landscape.

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[16] https://findstack.com/clubhouse-user-statistics/

[17] Reddit talk and Twitter Spaces were introduced earlier.

2.7   Global TV

Audiences of global scale represent an opportunity for content creators. In their seminal work, Katz and Dayan (1985) described media events as the ability to create a shared experience and a sense of "being there" among broad audiences via live television events. Following the pandemic, the increased usage of non-television entertainment, such as podcasts and gaming, is contributing to linear television viewership decline.[18] Streaming may eventually plateau, but it seems it will be difficult for linear television audiences to reverse their steady declines. In a world that experienced a drop in communal television viewing and accompanying rise in OTT, does it represent a new era for Katz and Dayan-type "shared experiences"? Conversely, can we recreate these media events, the sense of "being there", with a truly worldwide audience? Can the success of globally distributed shows via OTT digital platforms like Netflix or Amazon Prime create a global community which fosters cross-cultural water cooler discussions? Netflix and Disney+ are examples for a new model of global television, enabled by high-quality, localized content such as "Squid Game" (Korea) or "La Casa de Papel" (Spain). These successes suggest that shared global audiences are the future. Lil Nas' live concert on "Roblox" can offer an immersive "Media Event," in which mega global audiences experience a "sense of being together" at the same concert. This provides creative story-telling opportunities for content creators, marketers, and brands in their attempts to engage large but targeted audiences.

2.8   New Visual Language

Traditionally, video content creation was focused on long- and short-form linear storytelling. These formats evolved and continue to do so (Weiler, 2015), as messaging, selfies, emoji, and other tools fundamentally advance creative self-expression (Katz & Crocker, 2015). Digital natives increasingly focus their self-expression through formats that are visual, brief, and often ephemeral. Equally transformative has been the role of emoticons. These serve as replacements for linguistic expression and supplant standard text (Meeker, 2017) that younger generations consider "TLDR" (too long, didn't read). The skepticism of older generations toward emojis has dissolved. Research shows this form of expression now enjoys great popularity across age groups. The new communication language used by digital-savvy audiences, whatever their ages, offers richer meanings and context (Einav & Lipson, 2018). These new forms of content creation accelerated during the pandemic. In 2020, TikTok achieved mainstream popularity and introduced a unique tool for creative expression. TikTok provides the ability to tell a concise (60 seconds or less),

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[18]YouGov "International Media Consumption report, 2021" Retrieved from https://yougov.co.uk/topics/media/articles-reports/2021/02/16/global-media-2021

visual story. The narrative format can include news, singing, dancing, instructional videos, or even cooking recipes. One example is TikTok's recipe for baked feta pasta, which reached 52 million views as of February 2021[19] (Hutcherson, 2021). Individuals and professional content creators and brands can leverage this new mega platform as an effective way to reach audiences much larger than traditional television.

As societies move beyond the initial shock of the pandemic, it is an opportunity to reimagine the media landscape of tomorrow. Media technologies, platforms, content creators, and marketers leveraging those transformations must be fluent in the new language of digital communication. Across streaming, gaming, social media, and audio, the media world after the pandemic is fundamentally transformed.

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[19] The baked feta pasta phenomenon came stateside once MacKenzie Smith, the blogger behind Grilled Cheese Social, posted a video to her TikTok of yet another rendition at the end of January (though she posted it to her blog in June 2019). Smith's single video has gained nearly three million views, with the #bakedfetapasta collectively amassing 52 million views and counting on TikTok.

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Chapter 3
How COVID-19 Impacted the Design of Consumer's Feelings

Liraz Margalit

Abstract While the world works on containing the pandemic, businesses do whatever is needed to ensure business continuity and survival. In the long term, responding and recovering won't be enough, however. To grow and thrive in a post-COVID-19 world, digital technology has shifted from being a platform that is accessible and easy to use and significantly improves customers' life to a force that designs the customers' behavior. From a platform that serves the life of the customer, the customer has become the target, and digital technology has become better and better in learning how to collect more data to trigger the customers' feelings, desires, and needs. This process had started long before the pandemic, but the excessive use of digital technology has empowered the concept of behavioral design – a discipline that revolves around psychology and behavioral economic principals which aims at designing the mind of the customer without conscious awareness that he is the target of ongoing manipulations.

In just a few months' time, the COVID-19 crisis has brought about years of change in the way companies in all sectors and regions do business. Companies have accelerated the digitization of their customer and of their internal operations by 3–4 years. Digital adoption has taken a quantum leap at both the organizational and industry levels.

During the pandemic, consumers have moved dramatically toward online channels, and companies and industries have responded in turn. We have witnessed a rapid shift toward interacting with customers through digital channels (Margalit, 2021).

These changes will be long lasting and we will see their influence on our life in two main aspects. First, organizations from all sectors recognize technology's strategic importance as a critical component of the survival of their business, not just a

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source of cost efficiencies but an inherent part of their core values. Second and most importantly, digital technology has shifted from being a platform that is accessible and easy to use and significantly improves customers' life to a force that designs the customers' behavior (Margalit, 2021). From a platform that serves the life of the customer, the customer has become the target, and digital technology has become better and better in learning how to collect more data to trigger the customers' feelings, desires, and needs.

This process had started long before the pandemic, but the excessive use of digital technology has definitely empowered the concept of behavioral design.

These days, most of us are indeed "trapped in the web" and have no idea that the choices and decisions we make are driven by forces outside ourselves. Not only are our choices of tie, drink, restaurant, and vacation destination are not spontaneously made, either consciously or subconsciously, but neither are our cardinal life choices and decisions, such as our mate, profession, pension plan, financial investment tracks, and so forth. All these are channeled by the online companies whose influence and control over individuals' minds increase as their connection with users becomes ever more advanced and symbiotic. As we transfer the totality of our lives into cyberspace, the hidden significance is that every link we click on, every online form we fill out, is documented and analyzed. Commercial companies have the capacity to target every user by compiling digital footprints and using algorithms that provide continual psychological intelligence. They send each user a flood of personalized messages so as to engineer the user's every action, feeling, and thought without requiring direct interaction.

At the same time, we are witnessing a new digital method of data collection, not by the cyber companies but by the "wisdom of the crowd," which grants each individual in society the power to affect and determine the lives of others by rating them. According to this method, which was depicted in one of the episodes of the Netflix series *Black Mirror*[1] "Nosedive" that seemed like a science fiction, any person can rate anyone else, and the weighted scores – accessible to everyone – are what determines each person's quality of life and potential achievements. Thus, not the human aptitude for consciousness, free will, or self-choice but a social rating app determines what job people will have, where they will live, with whom they will drink wine, with whom they will marry and raise children, and in fact what they will sense and feel throughout their lives (Margalit, 2021).

Technologies now exist enabling the compilation of an unimaginable amount of information from various digital sources. Profiles can be built by tracking the digital footprints that people leave unintentionally and, in many cases, unconsciously. Tracking is done without contacting the subjects or asking for their permission. The term "digital footprints" refers to all monitorable online activities. Digital footprints are spread throughout networks and apps and supply a detailed story about each user – how many times a day they go on Facebook, the number of times they click "like," how often they log into news websites, and what they search for on Google.

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[1] "Nosedive" Series 3 Episode 1.

Without our being aware of it, our digital interactions reveal a tremendous amount of data about us: where we live and work, what we like to do, and how we feel momentarily. Each action taken on the web leaves a digital footprint. When analyzed all together, the actions expose information regarding our personal preferences, habits, and characteristics, if we tend to believe in conspiracy theories, whether we like cheap gossip articles, and so on. Such analyses have endless purposes, ranging from marketing and sales and decisions about loan applicants to political influence and storing our particulars in workforce databases that supply information about job candidates, without relying, again, on details obtained directly from the candidates. Every movement, no matter how small, is monitored – clicks, keystrokes, hesitations, deliberations, and the degree of involvement in the interaction.

Cambridge Analytica was one of the first companies to apply the idea that user behavior could be altered subconsciously by collecting digital footprints and personally adapting messages to each user. An ex-employee, Christopher Wylie, disclosed that the company, which first provided services to Senator Ted Cruz and later to Donald Trump, purchased the information from 50 million Facebook user profiles. The goal was to "build models to exploit what we knew about them and target their inner demons. That was the basis the entire company was built on" (Cadwalladr and Graham-Harrison, 2018).

The massive uproar over the scandal did not prevent other companies, ones who understood the enormous latent potential of subliminal messaging, from making similar moves in cyberspace that wielded huge influence and power through messages received by every user. The creators of the app "The Spinner," for example, realized it was possible to affect user behavior in a great many realms beyond politics. The app offers a service allowing anyone to impact any person they choose, without the person knowing it, by controlling the content of websites they visit. In simple terms, for the modest price of $29,[2] ideas can be planted in peoples' heads. The site offers a variety of dedicated content packages, each containing ten articles on the relevant subject, and so each time a certain person (the targeted user) browses a certain website during the 3 months in which the package is valid, they are exposed to the preordered content as if by chance. For instance, parents can be subconsciously persuaded to buy a dog or a smoker to quit smoking. Some of the campaigns go somewhat further and operate in a more personal space, for example, swaying a partner to consider an open relationship through write-ups such as "How Polyamory Saved My Marriage" or to reconsider suing for divorce through articles like "Four Tips to Help You Settle Your Divorce Out of Court." One of the most popular packages offered to men is called "Initiate Sex," which is marketed along with a promise to arouse sexual desire and initiative in their woman. Another bestselling package helps get rid of an unwanted colleague at work – the campaign focuses on attempts to get the colleague to find another job through content like "Is It a Good Time to Quit Your Job?" or "How to Write a Great Resume." The

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[2] As of the time of this writing.

Spinner also offers custom-adapted services. For instance, when a dispute broke out between a brother and sister over selling the house their parents left them, the sister hired the company to expose her brother to items playing up the advantages of selling, to help convince him to sell. The Spinner's model enables any private individual to target another private individual and brainwash the latter with messages such as "Stop smoking," "Marry me," "Get back with your ex," or "Make the first move to have sex with your husband." In an amusing video clip posted on Twitter (Better You Better Life, 2019), a determined young woman explains how she targeted her boyfriend to get him to pop the question through articles like "5 Signs You're Ready to Get Engaged" and "How to Choose an Engagement Ring." The clip has been viewed half a million times. The Spinner's service demonstrates better than anything else how the web has no clear rules, allowing anyone to act in gray areas if they so choose.

Another interesting example is online forms. We devote no thought to, or are unaware of, the fact that filling out forms on Internet sites and apps has become a source of abundant personal information. Traditional rating methods presented a score according to the details provided. The score was based on variables such as level of income, education, and health condition. Car insurance policies, for instance, take the number of prior accidents into account; and health insurance factors in medical history. Now imagine yourself requesting a loan to open a small business. After digging your dress shirt out of the bottom of the closet and making sure to shave, you sit in front of a bank loan officer who weighs every available clue to understand whether you can be trusted to return a loan in full. Besides your financial history, the officer tries to deduce as much detail as possible from your conduct at the meeting: whether you seem tense, irritable, or at ease. That kind of signal is no less important than your credit history. Alternatively, try to envision sitting and starting to fill in the fields of an online form. Suppose you hesitate before beginning to enter your response to a certain question; suppose you type especially slowly in another field compared to your typing rate in other fields; suppose you decided to skip a question and return to it at the end. All these actions are monitored and help the business create an overall assessment of you.

Thus, even hesitating while filling in a form could do you harm. In my professional capacity, I was once asked to consult for a large insurance company in the United States regarding the user experience upon filling out a health insurance application form. One of my first steps was to watch users while they filled in their particulars. I noticed one person exhibiting some strange behavior. Asked if he smoked, he answered in the affirmative. The next question asked how many cigarettes he smoked a day. He was in no rush to answer this one and appeared to hesitate. He lingered a long while and finally marked a certain number of cigarettes before proceeding. At the end of the questionnaire, he was requested to declare that the details he had provided were true and to sign his name. The request was accompanied by a statement that if any of the details were not true, the company reserved the right to take legal action. This statement, combined with the signature, has been found to be an effective deterrent. After the user read the statement, he appeared distraught and went back to the question concerning the number of cigarettes

smoked per day and changed his answer to a higher number. When I analyzed his behavior on that page, I found that the user had not only hesitated for a lengthy time before answering the first time but also had filled out the subsequent fields more slowly. Lying makes us more alert, and one of the ways our system copes with alertness is an overall deceleration of all our activities, in this case expressed in a slower response rate after the user lied.

Besides digital body language while filling out the form, people's degree of stability can also be gleaned from easily retrievable data such as monthly expenses. Examining expenses over the course of a few months gives us a reasonable picture of one's overall stability. Let us suppose that in a certain month their expenses total $2000, the following month $5000, and the next month $750. They will immediately be rated as unstable. Another creative way to test stability is by analyzing WhatsApp or FaceTime calls. People who speak frequently with their family and friends are considered more stable than those without a support network.

A model may thus be developed to tag people as reliable or stable, disregarding the personal information they provide and instead relying only on their digital footprints. One interesting example is how new contacts are added. People who fill every detail in its allotted space – name, company, and so forth – have been found to possess different personality traits than those who fill in all the information in one place or assign their contacts descriptive nicknames to remember them, like "Fred, good mechanic on 12th St." or "Melanie new cleaner, needs rides." Those who carefully insert details in the designated places have been found to be more organized and more obsessive and to possess fewer interpersonal skills than those who enter new contact details more informally. Each of us will soon be associated with a digital status based on the data trails we leave on each website, social network, and application, and it will be passed on to whomever wishes to run a background check on us. So the next time you fill out an online form, pay attention to how fast you do it and to every digital action you take, such as adding a new person to your contact list.

The user information collected serves innumerable objectives in a wide variety of realms, ranging from commercial marketing and sales to political campaigns, up through personnel recruitment companies seeking details on job candidates. These companies therefore have a vested interest in building up a databank with the lowdown on every individual and dealing in that information – which is the business model. Let us take, for example, a GPS app that sends your real-time user location data to a server to calculate the time of arrival at your destination. But by the same token, the app could also send that information to a third-party database. In a networking app installed on your device, you authorized access to contacts. Although two separate permissions were granted to two separate applications, if both use the same third-party database, that database can easily draw the connection between the two different pieces of information and use it for purposes you never intended or agreed to.

A popular way to influence users is to gradually increase the extremism of the material to which they are exposed. A former engineer with YouTube, who oversaw development of the video-sharing platform's recommendation engine, relates in the

Netflix movie *The Social Dilemma* (Rhodes, 2020) that algorithms tend to radicalize content. For instance, if a girl searches for "diets," the engine will eventually direct her to video clips about anorexia. Algorithms make sure to lead users to the most exciting, provocative, and sensational items, not because someone in the company wishes to harm users or put ideas in their heads but because that method is the most effective for holding their attention. Algorithms obviously do not operate out of malicious intent; indeed, they have no goal or will of their own. But their programmers do provide them with definitions of what comprises positive reinforcement, which in YouTube's case is prolonging as much as possible the time that users spend on the platform.

Take Yelp as an example – the app for sharing ratings and recommendations for businesses, whether restaurants, hotels, garages, doctors, or gyms, across the United States. The company claims that the algorithm they developed automatically filters user recommendations according to degree of relevance and promotes the reviews of users with a reliable background to help others make informed decisions about service providers. Although the company tries to give its users the sense that their algorithm is objective and based on user ratings, Yelp's revenue model relies primarily on advertising. It maximizes profits by offering businesses rated on the site greater exposure and better visibility of their positive reviews – for a price. When users go into the app to look for, say, a good restaurant in a particular area, they are sure they are choosing among all the possibilities, whereas in truth the options displayed to them have been filtered to match Yelp's interests. Clearly, the reviews and ratings are not objective. Even applications perceived as completely objective, such as navigation apps, employ psychological manipulations and constantly check what "works" better to make users prefer their app. One of the questions tested by GPS navigation apps is whether users will feel like they "beat the clock" if given an estimated arrival time a few minutes longer than expected, or if maybe it is better to provide the accurate time estimate to increase brand credibility. A third option is to underestimate the time to make users feel good when they start out, i.e., meaning to state a time earlier than expected (Serwadda et al., 2018).

These and other examples undeniably illustrate the hypothesis that users have no free choice in digital space. It is easy for us to underestimate the astounding power of behavioral design and its effect on our decisions, yet our choices are significantly influenced by the information to which we are exposed and the way it is presented, which is termed the "framing effect." The notion that framing can affect our decisions sounds trivial and even deceptive, but its impact is far-reaching precisely because it takes place in our subconscious minds. People are known to pay a bit more when using a credit card, but if we frame the information differently – referring to a credit company fee rather than describing cash payment as a discount – then they refuse to pay the exact same amount. We will further elaborate on this subject in Chap. 9, "From Behavioral Economics to User Behavioral Design." Although the use of cognitive biases such as framing has been around for a long time, the digital age triggered the practical use of behavioral design and elevated its

practice to an art form. In other words, algorithms understand us better than we understand ourselves.

I suggest you divide this first part into several sections and give each one a headline or sub-headline.

3.1 The Rise of Behavioral Design

Manipulating thoughts and attitudes is called "behavioral design." This so-called discipline that is based on principles of behavioral economics encompasses every aspect of the "choice architecture" meant to influence people's behavior to benefit businesses, including getting users to spend more time on apps, choose one service over another, or connect to certain people and not others. Don Norman writes in *The Design of Everyday Things* (1988) about how shaping the digital environment makes it possible to direct, manage, and even predetermine the desired user behavior. A user interface has the power to influence decision-making on websites or apps through manipulations that cause users to purchase products they were not intending to buy, spend a much longer time than planned on a site, check notifications on their smartphones every few minutes, sign up for mailing lists they do not need, or occupy themselves for countless hours playing games. These insights have been fully embraced by tech companies aiming to increase profits by creating the most effective "social engineering." Admittedly, this is nothing new, but whereas business organizations are held accountable for the way they operate, regulations are sorely lacking in the digital arena; and the laws that traditionally apply to companies are not enforced in digital. Neither the public nor the authorities pay much mind to the manipulative powers being exerted or to the unattended environment in which they are operating. The environment has tremendous influence over our behavior, but most of that influence is subconscious.

3.2 Principles from the Casino Were Copied One by One to Digital Technology

In her book "Addiction by Design," anthropologist Natasha Schüll shows how slot machines manage to put users in a special state of consciousness, where worries, fears, and awareness of the environment and themselves disappear.

She describes a special different level of consciousness that is actually the real reward from the game, a kind of trance state that allows for disconnection from the here and now, while awareness of time, place, and even the sense of self disappear altogether. The common phrase given by gamblers to describe this situation is "the nothingness zone." Interviews with heavy gamblers reveal that while they are playing in the casino, time stands still. Heavy gamblers who smoke say they find

themselves lighting one cigarette after another and without noticing it turns to ashes. This suggests that from our brain's perspective, the playing is more rewarding than a cigarette in injecting dopamine into our brain – the same neurotransmitter that produces a sense of pleasure in us.

One of the most common concepts among app designers is TOD (time on device). They realized that to keep people engaged as long as possible, it is not necessary to excite or create a mental challenge but to maintain a hypnotic flow of activity. In the past, both the casino and the games were filled with loud sounds and lights. Today the focus is on building an intimate, acoustically adapted environment that will not provoke the system too much and thus allow a gradual entry into a trance state. Apps also mimic the reward mechanisms in our minds. Touch screens are programmed to respond differently depending on the type of action, with vibration, sound, and lights. Receiving feedback in response to an action encourages repetitive, if not compulsive, behavior. Just like interacting with a slot machine, you pull the handle and get reinforcement, and the machine responds with lights and sounds. Expecting the reward triggers the obsessive repetition. One of the amazing stories in this regard is that gamblers who suffer from severe pain stop feeling the pain as soon as they start playing, and the pain returns immediately with the loss of the last penny. If we were under the impression that the reward of gambling is the thrill or opportunity to earn big, it is clear that the real attraction is the ability to be in the nothingness zone.

All this does not happen by chance. The casino and our mobile phones are designed in such a way that will draw players (and users) to spend hours and even whole days in the casino. The music, the atmosphere, the fact that there are no windows or clocks, the carefully chosen colors, and the close analysis of the behavioral patterns of the guests, each element is carefully designed to make sure that you are drawn into the game. These principles have been copied to dating apps, social networks, and mobile games, where they have been perfected to reach the state of the art.

Not only are the most addictive digital technologies designed based on the same principles of a slot machine, they also allow the same disconnection from the environment, the same coveted nothingness area. We don't access social networks, smartphone games, or even dating apps like Tinder out of a desire to take part in the activities, catch up with friends, or find a date. The reward comes from the change in mental state, the disconnection from the here and now provided by the monotonous scroll in the feed downward (or sideways in the case of Tinder) in a motion reminiscent of moving the gambling handle while the content continues to change like the drums in the slot machine. Digital interaction does not require mental investment, thought, or intention. A unique activity pattern characterizes our brains on social networks. This unique brain activity differs from the activity that characterizes a state of relaxation, stress, or any other state of alertness. The condition is known as flow – high emotional involvement without investing resources. One way to sweep the user away, to immerse them in this state of flow, is to remove the stopping cues that signal to the brain when it's time to move on to the next activity. Although they do not seem significant and most of us do not

notice their existence, stopping cues fulfill a significant function in our lives. The alarm clock is the first hint that informs us that it is time to get up and start the day. We feel tired when it's dark outside because the body releases a hormone called melatonin, signaling that it's time to go to sleep, and when the plate is empty, we understand that the lunch break is over. In casinos and in the digital world, there are no stopping cues. The casino has no windows or clocks, while in the digital world, mobile alerts, news updates, and emails keep coming. Facebook, Twitter, and Instagram are designed so the content never stops, thus causing us to consume content non-stop. Immediately after finishing an episode on Netflix, the next episode begins, which leads to the difficulty of disconnecting from the screen (aka binge watching). Indeed, Netflix's CEO was caught saying its biggest competitor is not YouTube or cable, but the fact that people need to sleep at night. Indeed, a 2019 survey found that 36% of respondents said they would prefer to give up sex for a year over Netflix (Pilipets, 2019).

3.2.1   How Would You Like to Lose?

Let's take a dive into the algorithms that decide the right timing and intervals for reward or punishment. In gambling sites, the algorithms are engineered so that they adapt themselves to the psychological needs of each user. People who have been identified as risk averse will lose gradually. For every $2 they lose, they will earn $0.30. This marginal profit is accompanied by lights, sounds, and vibrations. Our mind interprets this as winning for all intents and purposes so we do not feel like we've lost all our money. If, on the other hand, you are identified as a risk lover, a reward schedule was developed especially for people who seek to win big and therefore do not mind losing a few times along the way. Another algorithm produces "engineered randomness." Statistically there is no difference between missing the win in one or five strokes, but psychologically the difference is huge. So the "near miss" concept makes the user feel that he was very close to victory and thus motivated to try again.

The same reward schedule was also developed for YouTube. A former YouTube engineer who was responsible for developing the recommendation engine says[3] that algorithms have a tendency to radicalize content. If, for example, a girl was looking for a video on diet, thanks to the recommendation engine she would end up watching a video on anorexia. The algorithms know how to lead you to the most exciting, provocative, sensational item. It's not that the developers on YouTube wish to harm people, but it is more effective in grabbing attention. Like any other player in the capitalist society, they try to understand how they increase profits by making users spent time in the app as long as possible.

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[3] "The Social Dilemma" (2020) is a Netflix documentary drama directed by Jeff Orlowski. It was listed as one of the top 10 movies and praised for being the most vivid and terrifying analysis of social media ever created (Michelle Gao, 2020, Sept 21).

3.2.2   The Human Nature that Makes the Virtual Rewards Possible

Humans actually live in a dual reality. All other animals live in an objective reality containing objective entities like mountains, rivers, monkeys, and streams. We share that objective reality, but over the years we have created on top of it a second layer of fictional reality consisting of fictional beings; and the second, artificial sphere is becoming more dominant by the day. We are galloping with all our might toward a reality in which we will live completely in the fictional, virtual world. Imaginary reality has reached a peak, and for the first time in history humans are spending less time on physical reality and transitioning into spending an increasing amount of time in another realm, one in which conversations, expressions of emotion, pleasures, thrills, and even sex are virtual. We do business in virtual space, express feelings using emoji, shop in virtual stores, hang out with friends on virtual platforms, and take guided VR tours, meaning that even the experiences we accumulate are virtual as well. Now a guide can "take" us anywhere on earth from the comfort of our homes. There are plastic surgery simulation apps using filters and even apps that let us try on designer clothes, be photographed in them, and upload photos that look like the real thing, for example, the Carlings fashion brand that offers a digital fashion collection. Users chose an item of clothing from the site, sent a photo of themselves, and in return received a picture in which they were "wearing" the garment that they bought. One minor detail – the fact that the garment did not exist in reality – in no way detracted from enjoyment of the product, as proved when the entire collection sold out in just days. An amusing story behind this absurd idea is that the CEO of the digital fashion company initially thought it was a dumb idea and that no one would pay good money just to post a picture of themselves dressed in clothes that do not really exist. He told his kids about the idea at dinner, and they reminded him that the popular game Fortnite makes a lot of money selling virtual clothes to a nonexistent character (Larsen, 2020).

As our imaginary world continues to evolve, we are gradually transferring one piece of our lives after another from the physical realm to the invented, virtual realm. When teenagers were asked if they would prefer a virtual picture or a real painting hanging in their parents' house, the answer was unanimously "virtual." A photo posted on social media evidently brings a greater emotional reward, due to the likes and comments that significantly increase its value. But likes do not have any true value. They are a kind of social convention, a story that we tell ourselves. Through associative learning, at some point people began ascribing immense value to the thumbs-up icon. It might be assumed that the transition to the digital arena, where both the rewards and the thrills are virtual, would make us hold the rewards in lesser regard, but quite the opposite is true. Never before have the rewards been so addictive.

3.3 Summary

In just a few months' time, the COVID-19 crisis has brought about years of change in the way companies in all sectors and regions do business. Digital adoption has taken a quantum leap at both the organizational and industry levels. We have witnessed a rapid shift toward interacting with customers through digital channels.

These changes will be long lasting but most importantly, it will be invisible. Digital technologies rapidly adopted a new discipline; they have started to design the customers' behavior. Although this process had started long before the pandemic, its excessive use was in a large way the result of the fact that people have shifted their life to the digital arena.

It is easy for us to underestimate the astounding power of behavioral design and its effect on our decisions, yet our choices are significantly influenced by the information to which we are exposed and the way it is presented. The field of engineering user opinions in the digital world is called "behavioral design." This discipline is based on principles of behavioral economics and aspires to understand how to influence people's behavior to benefit businesses, including getting users to spend more time on apps, choose one service over another, or connect to certain people and not others. This realm has tremendous influence and control over the messages that each user receives.

A user interface has the power to influence decision-making on websites or apps through manipulations that cause users to purchase products they were not intending to buy, spend a much longer time than planned on a site, check notifications on their smartphones every few minutes, sign up for mailing lists they do not need, or occupy themselves for countless hours playing games.

Data compilation technologies enable building profiles by tracking the digital footprints that people leave unintentionally and, in many cases, unconsciously, all without contacting them or requesting information from them.

As the virtual world continues to evolve, we are gradually transferring one piece of our lives after another from the physical realm to the invented, virtual realm. A photo posted on social media evidently brings a greater emotional reward, due to the likes and comments that significantly increase its value. It might be assumed that the transition to the digital arena, where both the rewards and the thrills are virtual, would make us hold the rewards in lesser regard, but quite the opposite is true. Never before have the rewards been so addictive.

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Chapter 4
Music Innovation and the Impact of COVID-19 on the Way We Experience Music

Revital Hollander-Shabtai and Or Tzofi

Abstract Innovation in music has led to the development of new musical genres, instruments, media, and creation tools. In recent decades, the Internet and mobile devices have revolutionized the field, shifting music consumption to digital media, making music available anywhere and anytime. Recent technological advances are enabling applications to be taken to the next level through generating music or playlists and personalizing musical experiences. Innovative business and monetization models are being developed to change the distribution of funds in the music industry in a manner advantageous to artists. Researchers continue exploring additional benefits of music in fields like sports, health, and well-being. Despite these developments, the structure of the music industry and the ways in which we consume and teach music have changed little for decades and even centuries. The media have changed, but the experience of listening to a song remains the same, and the prevalent method of learning music is still in a face-to-face lesson.

COVID-19 has dramatically shaken up the music scene: while music consumption increased, live concerts were cancelled, music lessons moved online, and playing in ensembles became unfeasible. In this chapter we discuss how the pandemic spearheaded innovation in music, driving people to create and experience music in new ways. These changes presented opportunities for music startups to harness technology, develop innovative musical experiences, and disrupt the music industry. This chapter discovers changes in music innovation and how it was affected by the pandemic. We focus on the case of the Israeli music startup ecosystem.

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4.1   Key Elements in Music Innovation

Music innovation applies to various fields and applications associated with musicians, music fans, teachers, and the music industry. Those applications include tools for music consumption and creation, musical instruments, controllers, synthesizers, media, hardware for audio and sound design, and applications for live shows, performance, sports, health, therapy, education, music distribution, and monetization.

As in most other creative industries, the evolution of the music industry has been heavily shaped by media technologies (Jeffcutt, 2004; Wikström & DeFillippi, 2016). In fact, many of the disruptions and successful innovations in the music industry are attributed to external innovators (Tschmuck, 2012; Uli, 2018). For example, the Walkman was developed by Sony in 1979, when the company was not yet a participant in the recording business. Another example is MTV, created in 1981 by two subsidiaries of Warner Communications, in cooperation with the RCA and IT&T. The initial doubts of the US music industry about the new music video channel, based on fears of the high costs associated with video productions and the assumption that there was no market for music videos, were quickly proven wrong, as the MTV audience skyrocketed to 17 million within 2 years. The marketing strategy of music companies was changed forever, thanks to MTV and other music video channels, to the extent that today one cannot imagine marketing a recording without an accompanying video clip (Tschmuck, 2012). The compact disc made a comparable impact on the music industry. Co-developed by Philips and Sony in 1979, its successful introduction in the music market and the following rapid transition from vinyl records resulted in two decades of continuous growth for the global music industry, with recorded music sales more than doubling by the end of the 1990s (Tschmuck, 2012; Wikström & DeFillippi, 2016).

Far more than any other technology, the Internet has radically altered the production, distribution, and consumption of music (Molteni & Ordanini, 2003). The beginning of the 1990s saw the appearance of MP3s, a method for compressing audio files to a size that was easily transferable through the Internet and that could be stored on a computer hard drive (El Gamal, 2012; Tschmuck, 2012). The effect of this innovation was not fully realized until the introduction of portable devices, such as MP3 players and iPods, enabling consumption of music wherever the listener was located. Early versions of MP3 players had rather limited capacity, being able to hold only a small number of songs or musical works. The iPod, launched in 2001, was a huge improvement on other MP3 players since it could store up to 5GB of MP3 files (Hviid et al., 2018). With the advent of peer-to-peer (P2P) file sharing, as popularized by Napster in 1998, things started to look grim not just for the music industry but for the entertainment industry as a whole on a global scale (Vaccaro & Cohn, 2004; Lampel et al., 2008; El Gamal, 2012). Napster ran into legal difficulties over copyright infringement, was quickly sued by the music industry establishment, and was shut down by court order. However, many new services emerged and took its place.

The power and influence of the pre-Internet music industry stemmed primarily from its ability to control physical distribution, but the Internet has rendered such models increasingly irrelevant. Internet distribution initially resulted in a sharp decline of music sales, primarily due to piracy, which the music industry tried to fight, but to no avail (Alexander, 2002; Wikström, 2014). This failure to contain the new technological challenges of the era and the massive and incessant pressure caused by the new media resulted in a strategic repositioning by the major music companies. The music industry establishment's ineffectual attempts to adapt can be explained by its difficulty in anticipating the impact of technological opportunities, the complex and time-consuming process of establishing a new techno-institutional match, technological conservatism, the oligopolistic structure of the sector, and the hierarchical structure of major companies. As a result, the music sector became vulnerable to uncontrollable change triggered by an exogenous factor, originating from the fringes of the sector, and driven by external actors (Dolata, 2008).

The launch of the Apple iTunes Music Store in 2003 marked the start of a new model for online music retailing. Apple, which at the time was not a music industry player, managed to secure agreements with all the important music licensees, thereby providing an extensive music catalog and giving consumers a new legal option, using a novel pricing model. While the iTunes Music Store did not stop music piracy, and the level of illegally obtained music continued to exceed that of purchased music (Waldfogel, 2010), Apple nonetheless grew to become the number one retailer of digital music; it now controls a market share of 85–90% in the United States and has become the largest music distributor in the world since 2010 (Tschmuck, 2012; Hviid et al., 2018). This transformation had disruptive consequences beyond music retailing and redefined music companies' organizational structures, work processes, routines, and professional roles. However, while the iTunes Music Store was a disruptive innovation, it was relatively incremental, as it replicated traditional music distribution logic, and the major labels' positions and power structures remained largely untouched (Wikström, 2012; Wikström & DeFillippi, 2016).

Other players subsequently joined the digital music market, becoming key participants in the music scene. YouTube, founded in 2005 and acquired by Google in 2006 for $1.65 billion, quickly rose to prominence as the world's most important online video portal and second-largest search engine, spearheading the online distribution channels (Hviid et al., 2018). The music video industry, which had been dying following the success of Apple's iTunes, was consequently resuscitated (Edmond, 2014): every music video is now instantly uploaded to YouTube, and an artist's popularity is measured by the number of views, as well as by album or single sales. Furthermore, YouTube offers artists exposure to a global audience, bypassing the conventional music distributors (Cayari, 2011; Oh & Lee, 2013). While serving as an important partner to the music industry, YouTube was accused by major labels of not paying adequate royalties and of hiding behind "safe harbor" legislation to do

so.[1] Yet, by the end of 2017, the channel had signed revenue-sharing agreements with rights-collecting societies and the three major record labels, Universal, Sony, and Warner Music Group (Hviid et al., 2018).

The introduction of mobile devices made music available anywhere, anytime and ushered in the development of a variety of interactive musical applications and virtual musical instruments that use a touchscreen interface. The growing computational power of these devices has allowed developers to use locally run models, thereby improving applications and making them more sophisticated and responsive (Essl & Rohs, 2009).

In 2015, recorded music revenue began growing again, after nearly two decades of privacy-driven declines. This shift can be attributed to the emergence of music streaming services, such as Spotify, Apple Music, Amazon Prime, and Deezer. At the core of the subscription-based business model lies access to music, rather than ownership of that music (Wikström, 2012; Sinclair & Tinson, 2017). The music industry unsurprisingly embraced and supported music streaming, but the battle over royalties paid to creators, especially to artists and independent labels, continues (Marshall, 2015; Shapero, 2015). From 2015 to 2019, overall recorded music revenues, driven largely by streaming, posted a compound annual growth rate of 13%, reaching $11.1 billion in annual revenue. In 2019, streaming accounted for 80% of those revenues.[2]

Not only was music distribution completely altered by the digital revolution in the music industry, but its value-added network was also fundamentally reshaped, with the industry becoming more artist-driven (Tschmuck, 2016). Musicians were transformed from dependent contractors into artistic entrepreneurs—"artrepreneurs," as defined by Engelmann et al. (2012)—and music making became a process involving economic and legal aspects in addition to art. Artists have moved center stage and can now collaborate with partners from outside the traditional music business and benefit from different income streams (Thomson, 2013). Social media sites and user-generated content platforms enable musicians to market and promote themselves to a global audience. Moreover, the digital revolution merged the spheres of active music making and passive music consumption. Music fans now participate in the production, distribution, and communication of music and use and change music for their own purposes (Winter, 2012; Tschmuck, 2016).

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[1] Why is the music industry battling YouTube and what happens next? https://www.theguardian.com/technology/2016/may/20/music-industry-battling-google-youtube-what-happens-next

[2] How streaming is changing the music industry, Deloitte. https://www2.deloitte.com/us/en/insights/industry/technology/how-streaming-is-changing-the-music-industry.html

4.2   The Relationship Between Big Players in the Music Industry and Music Startups

The music industry is characterized by a highly concentrated oligopolistic structure (Lopes, 1992; Alexander, 2002; Watson, 2008; Guichardaz et al., 2019). During the 1970s and 1980s, it was controlled by "The Big Six": PolyGram, CBS, RCA, EMI, Warner, and MCA. These major record companies employed an open system of development and production under oligopolistic conditions that incorporated innovation and diversity in popular music as an effective strategy for maintaining the viability and control of the market (Lopes, 1992). The major label landscape is, however, subject to constant change due to mergers, acquisitions, and restructuring. Today, there are only three major labels: Universal Music Group, Sony Music Entertainment, and Warner Music Group. In 2019, their combined market share of the global recorded music market was 68%, with independent labels owning 32%.[3]

The major labels continued to thrive and maintain their oligopoly in the overall music market for decades. They anticipated the move toward an artist-driven industry and established the "360-deal," exclusive artist recording contracts whereby the label supports the artist in return for a percentage of all the artist's earnings from all sources and not from the particular recording. This new arrangement, while requiring much more interaction with external actors, guarantees the music labels a share of the revenues from publishing, merchandising, and touring, in addition to recordings (Marshall, 2013; Tschmuck, 2016). By developing this new strategy, major labels have managed to reorganize themselves and their environment in a way that optimizes their business and re-secures their profitability (Stahl & Meier, 2012; Guichardaz et al., 2019). Transactional capability—i.e., the capability that increases market exchange between a firm and its environment—is becoming predominant among music majors and helps explain their resilience (Guichardaz et al., 2019). In this context, it is worthwhile to consider the Korean and Japanese music industries. The former embraced digitization, flourished, and became globally recognized; the latter resisted it and declined. Another reason for the success of Korean cultural industries has been that they have received considerable government support, as they were deemed central in an export-focused economy (Kwon & Kim, 2014; Parc & Kawashima, 2018; Parc & Kim, 2020).

Music startups are technology companies that seek to bring innovation to the music industry and change the ways we create, consume, and experience music. That innovation includes enhancing music experiences and interaction; enabling music to reach a larger audience; incorporating music into various activities in our daily life; and developing new monetization and business models that will fairly distribute royalties and revenues between artists, labels, and representatives. Established music firms may face barriers when conducting business model

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[3] Music & Copyright. (May 20, 2020). Total recorded music market share worldwide in 2019, by label [Graph]. In Statista. Retrieved September 13, 2021, from https://www.statista.com/statistics/947107/recorded-music-market-worldwide-label/

experiments, especially service-based models, because of their size, established corporate culture, and organizational structures. For this reason, startups have become the leading force in innovative music business models in this area (Waldner et al., 2012). As of April 2021, there were 4378 music startups throughout the world. Out of those, 1086 were funded—to a total of $12.8 billion—and 643 (14.6%) were inactive. To date, the sector has seen 172 acquisitions, 17 initial public offerings (IPOs), and 9 companies that have become unicorns (valued at more than $1 billion): Spotify, Shazam, Deezer, Epidemic Sound, SoundHound, Beats Music, Ximalaya, NetEase Music, and JoyTunes.[4]

In recent years, the three major labels have been embracing innovation and cooperating with startups in a number of ways. Warner Music Group and Sony Music have both partnered with the Techstars Music accelerator and have made some high-profile investments in music startups through their investment funds. Universal Music Group has the Abbey Road Red in-house incubator; the Capitol Innovation Center, a Los Angeles-based "collaborative workspace" for artists and tech-heads; and the Universal Accelerator Network—a growing series of partnerships with tech accelerators around the globe. In spite of such efforts, some startups are unhappy about the flaws in these collaborations and criticize the internal structure and decision-making process of the major labels as being slow and old-fashioned. The startups describe difficulties working with different label departments and reaching a licensing contract and claim that major labels are unwilling to take the risks involved in working with startups, accusing them of doing nothing more than creating an "innovation theater." On the other side, the major labels criticize startups for inexperience, lack of understanding of the music market, naivety about navigating the music industry, and having unrealistic expectations of the cost of doing business with the industry.[5]

4.3   Innovation and Entrepreneurship in Israel

Israel is a powerhouse of entrepreneurship and cutting-edge innovation and technology. The phenomenal success of the Israeli high-tech ecosystem and the fact that Israel was able to achieve such impressive growth in the sector that it could boast the highest concentration of startups in the world have been examined by many works, the most notable of which is *Start-up Nation* (Senor & Singer, 2011). The authors of that book claim that the factors that led to the success of Israel as a startup ecosystem include the mandatory military service, the culture of questioning and argument, assertiveness and informality, geopolitical disadvantages that encourage constant innovation and improvement, and immigration waves which included

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[4] Music Tech Sector Landscape Report, Tracxn. https://tracxn.com/d/reports-feed/music-tech-sector-landscape-report

[5] Report 424: Music/Tech Startups in 2019, musically. https://musically.com/2019/09/02/report-424-music-tech-startups-in-2019/

many academics. Another factor encouraging innovation noted by other scholars is government support (Isenberg, 2010; Kon et al., 2014).

The role of the military as one of the most prominent drivers of the Israeli high-tech industry is widely known, and it feeds the startup ecosystem with human resources who have the motivation for entrepreneurship (Senor & Singer, 2011; Kon et al., 2014). During their military service, young people receive technical training and acquire both a high sense of responsibility and aspirations for success. Thus, the army brings with it professional training, social ties, and social codes that influence the composition of the high-tech workforce and the high-tech industry's organizational and functional culture (Chorev & Anderson, 2006; Swed & Butler, 2015). This creative, skilled, and multicultural workforce is one of the most prominent reasons why executives and multinational corporations (among them Microsoft, Google, Amazon, Apple, Facebook, IBM, etc.) have chosen to establish research and development centers in Israel.[6]

In addition to the factors that are unique to Israel, institutional mechanisms exist in the country that foster entrepreneurship, including venture capital funds, incubators, and accelerators, all of which provide education, mentoring, and a relatively safe environment in which entrepreneurs can develop their startups (Rothschild & Darr, 2005). Also worth mentioning are the Israeli higher education institutions and the multinational corporate research centers that have made significant contributions to the startup ecosystem (Kon et al., 2014).

The local startup ecosystem is maturing and scaling up and now hosts many successful local unicorns.

In 2020, Israeli startups raised a record $10.178 billion; in Q1/2021 alone, $5.374 billion was invested in Israeli startups. The total value of mergers and acquisitions (M&As) in 2020 was $7.97 billion, compared to $21.67 billion in 2019, but that reduction can be explained by the COVID-19 pandemic, as the world economy closed down. M&A activity in Q1/2021 returned to pre-pandemic levels, its value already surpassing $2 billion. Moreover, 128 Israeli high-tech companies raised $6.96 billion through IPOs in 2020.[7]

4.4 The Israeli Music Startup Ecosystem 2021

In this section we explore the Israeli music-related startup ecosystem. For many years, music entrepreneurs struggled to raise funds for their startups, but that has changed since 2015 (see Fig. 4.3). In a growing community of talented people who

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[6] The Israeli Technological Eco-system, Deloitte. https://www2.deloitte.com/il/en/pages/innovation/article/the_israeli_technological_eco-system.html

[7] The Israeli Tech Review 2020 and 2021, IVC Research Center and Meitar Law Offices. https://www.ivc-online.com/Portals/0/RC/Magazine%20&%20YB/IVC_Meitar_Israeli_Tech_Review_2020/mobile/index.html, https://www.ivc-online.com/LinkClick.aspx?fileticket=elxRgCjBtZw%3d&portalid=0&timestamp=1618166486915

are enthusiasts both for music and for science and technology, more and more Israeli entrepreneurs are choosing to combine their love of music with technological innovation.

In 2015, a community activity named TMT (Tel-Aviv Music Technology) was founded.[8] It now numbers about 3500 music technologists (musicians, sound engineers, designers, developers, entrepreneurs, psychologists, neuroscientists, investors, and educators) and has held 40 meetups, conferences, and music-tech hackathons. This activity and other music and tech events have resulted in increased exposure to and awareness of music-tech in Israel and have generated local and international connections that have led to new collaborations and new ventures.

In a study, we collected data from Crunchbase, Tracxn, IVC, and Start-Up Nation Finder, the last two of which cover the Israeli startup ecosystem and provide information on most of the startups. We analyzed the data of 192 music-related startups featured on those sites and prepared a comprehensive questionnaire, which we sent to the founders of those startups. Of the founders approached, 40 responded to the questionnaire, and 10 were interviewed. The research was conducted from September 2020 to June 2021.

Out of the 192 startups, 122 are active and 64 are inactive. The remaining six have been acquired by international companies: Yokee (acquired by Stingray), SoundBetter (Spotify), Mugo (Deezer), IMGN (Warner Music), iCast (Storytel), and FoxyTunes (Yahoo). At least 47 of the startups were funded, raising a total of more than $751 million. One company (Dalet SA) issued an IPO; one (JoyTunes) became a unicorn (in 2020); one (Artlist) is labeled as a "soonicorn," a startup expected to become a unicorn (in 2021); and one (Waves Audio) is a private audio-tech company with an estimated annual revenue range of $100–$500 million.

Most Israeli music startups were founded in 2010 or later (see Fig. 4.1). In 2012, 18 companies were founded, twice as many as in 2011; thereafter the number of newly founded companies per year remained similar, reaching its peak in 2016 with 26 new companies. Over the next 4 years, the number dwindled, having recorded a
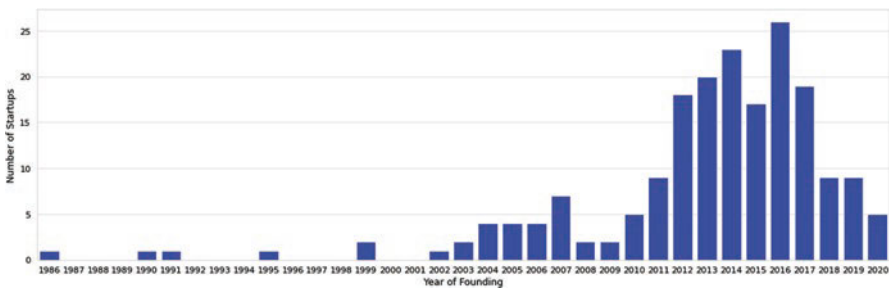

Fig. 4.1 Number of Israeli music startups founded in each year

significant drop in 2018, to a level that has stayed fairly constant. This trend is in accord with the wider gradual decline of newly founded startups in Israel. According to the Israel Innovation Authority, from approximately 1400 new startups founded in 2014, the number shrank to 850 in 2019 and to 520 in 2020.[9] However, this data is probably not accurate (especially for 2020 and 2021), since reports concerning founding and closing of companies may be published several years after the event.

We investigated Israeli music startups and other Israeli startups that have some relation to music. We labeled the startups according to five main categories: music creation and consumption; audio and hardware; streaming; education and digital health; and business, ecommerce, fintech, and advertising. Since music and media technologies are deeply intertwined, some startups may fall into any of these categories, even those with a minor connection to music. One such example is startups that develop video tools and platforms (such as YouTube when it was founded), since video has become an integral part of music consumption and other music-related activities. The largest sector, including more than half of the startups, is that of music creation and consumption. Other relatively large sectors in Israel are education, music for digital health, and streaming; the remaining two categories are less well represented (Fig. 4.2).

We compared the amount of funds raised by companies in each of these sectors in both Israel and globally, as shown in Table 4.1. The sector that has raised the most funds in Israel is music creation and consumption, with just under $491.5 million. That corresponds well both to the number of Israeli startups operating within this sector and to the almost $3.7 billion raised globally. Surprisingly, Israeli streaming startups raised only about $2 million, making streaming the lowest-funded Israeli sector, despite it being both the best funded worldwide (with $8.4 billion) and the second largest sector in Israel. The global funding figures were taken from the Tracxn music-tech report[10]; the Israeli funding figures for each company are available on IVC, Start-Up Nation Finder, and Tracxn. As a result of the different definition of music startup used by each source, some companies included in this research may not appear in the Tracxn report and vice versa. In addition, not all the funding data is available online, and some companies choose not to disclose it. This table is therefore only indicative, providing general insight as to the trends and the relative numbers.

For many years, Israeli music startups struggled to raise funds locally. Some moved to the United States, some remained small private companies (with the exception of Wave Audio, which became a leader in its domain and is still private), and some vanished. Music innovation remained on the fringes of the Israeli high-tech ecosystem, far behind other sectors. However, since the middle of the 2010s, local investors have shown more interest in investing in music-related startups. This

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[9] Israel Innovation Authority 2021 Innovation Report.

[10] Music Tech Sector Landscape Report, Tracxn. https://tracxn.com/d/reports-feed/music-tech-sector-landscape-report
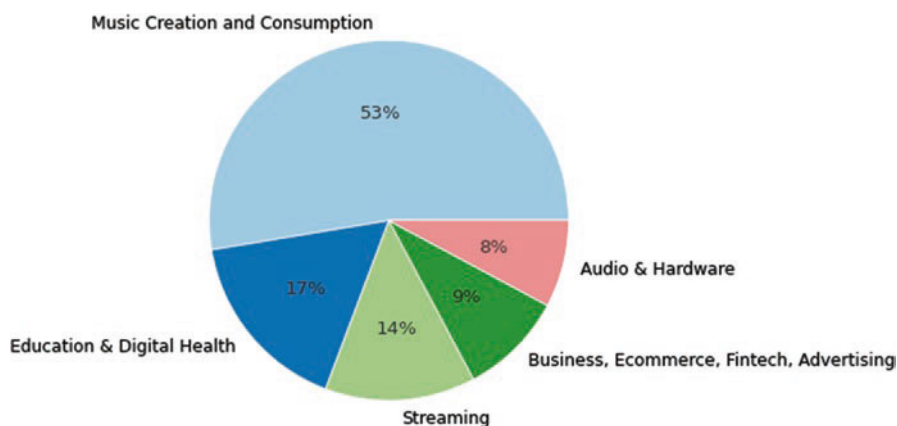
Fig. 4.2 Distribution of Israeli music startups by sector

Table 4.1 Comparison of total funding raised by music startups globally and in Israel in each sector (USD million)

Sector	Global	Israel	Funding of Israeli startups as a proportion of global funding
Audio and hardware	1249	65.52	5.25%
Business, ecommerce, fintech, advertising	324.1	87.612	27.03%
Education and digital health	132	105.01	79.55%
Music creation and consumption	3684.2	491.48	13.34%
Streaming	8400	2.043	0.02%
Total	13,789.3	751.665	5.45%

may in part be due to the rehabilitation of the music industry and the maturity of the Israeli high-tech ecosystem, allowing it to open up to new, small sectors.

According to the available data, the best years in terms of funding were 2015, 2018, 2019, and 2021, with total investments ranging from just under $99.5 million in 2018 to almost $176 million in 2019. Relatively minor investments were recorded in 2017, raised by ten companies in total; although funding for Israeli startups greatly increased in 2020, the big drop in that year in the music sector may have been a result of the COVID-19 pandemic. It seems that 2021 has been a good year for the music sector, with recorded investments of more than $120 million raised by five companies by July alone. Of the startups we investigated, 80% reported a growing interest in their ventures on the part of investors in 2020–2021 and related this to the pandemic (Figs. 4.3 and 4.4).
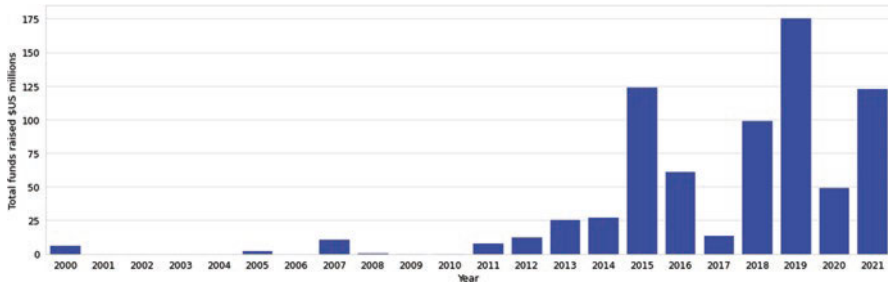
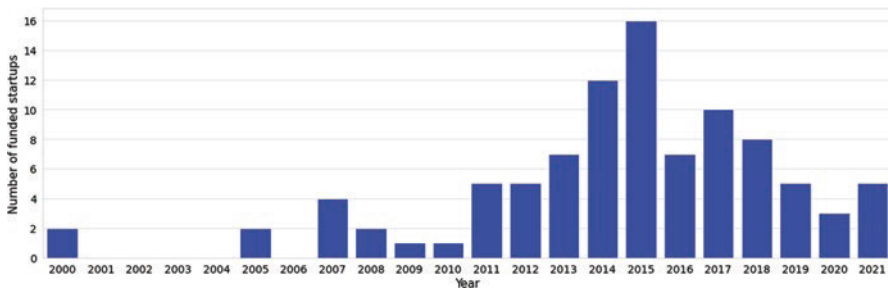**Fig. 4.3** Total funds raised by Israeli music startups per year

Fig. 4.4 Number of funded Israeli music startups per year

4.5   The Impact of COVID-19 on the Music Industry

In December 2019, an outbreak of a newly discovered coronavirus was identified in Wuhan, China. Within a short time, the number of cases had increased exponentially, and the virus had spread across the globe. The world that we knew has changed in its wake, as social distancing and self-isolation have become common practice. The music industry was, unsurprisingly, tremendously affected by the social gathering restrictions and the lockdowns, which led to the cancellation of tours, concerts, and album releases and caused many other disruptions (Agarwal & Sunitha, 2020; Pitlik et al., 2020; Seetharaman, 2020). Nevertheless, the global recorded music market grew by 7.4% in 2020, and total revenues accounted for $21.6 billion. It was the sixth consecutive year of growth and the industry's best year since 2002.

Growth was driven by streaming, which accounted for 62.1% of total global recorded music revenues, and compensated for the decline in other formats' revenues. Paid subscription streaming revenues increased by 18.5%, with 443 million premium accounts; total streaming (both free and premium) grew by 19.9%, reaching $13.4 billion.[11] While total music streaming revenues increased, Sim et al.

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[11] IFPI issues Global Music Report 2021. https://www.ifpi.org/ifpi-issues-annual-global-music-report-2021/

(2020) found that streaming consumption actually *decreased* during this time as a result of movement restrictions, particularly in countries where the restrictions were more severe. Many people stream music on the road and prefer video-based music at home. This argument is supported by the simultaneously increased consumption of music on video platforms, such as YouTube and Twitch (Sim et al., 2020; Onderdijk et al., 2021).[12]

Aside from live shows and music streaming, however, overall music consumption has greatly increased during the pandemic. Studies conducted in the United States, Spain, Italy, Israel, and India report that people have turned to music during lockdowns and have devoted more time to musical activities, such as listening, singing, composing, or playing an instrument. Lockdown measures have had a negative impact on people's mental health (Rossi et al., 2020; Wang et al., 2020), but music has provided a coping mechanism to reduce stress, anxiety, and loneliness and to improve general well-being (Cabedo-Mas et al., 2020; Gazmer et al., 2020; Giordano et al., 2020; Ferreri et al., 2021; Ziv & Hollander-Shabtai, 2021). Even the general emotional reaction to music has been found to be more intense during this time than under normal circumstances (Ziv & Hollander-Shabtai, 2021). Listening habits seem to have changed: demand for nostalgic music has soared (Yeung, 2020; Gazmer et al., 2020; Gibbs & Egermann, 2021), at the same time that more and more consumers are listening to new music and discovering new artists (Cabedo-Mas et al., 2020).[13] Research suggests that this change of habits was a reaction to the lockdown rather than to the pandemic itself (Yeung, 2020).

The prohibition on live concerts forced artists to adjust and integrate new forms of media to keep their audiences engaged. Many moved to online alternatives, such as livestreaming, and the number of users surged. Some of the most notable livestreamed concerts include those of Dua Lipa,[14] the Rolling Stones,[15] Blackpink,[16] the Glastonbury Festival,[17] and the One World: Together at Home concert, which raised $127 million

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[12] The Future Of Music Streaming: How COVID-19 Has Amplified Emerging Forms Of Music Consumption https://www.forbes.com/sites/kristinwestcottgrant/2020/05/16/the-future-of-music-streaming-how-covid-19-has-amplified-emerging-forms-of-music-consumption/?sh=3e57f55444a3

[13] Americans are listening to more new music during coronavirus pandemic, new study says https://www.nme.com/news/music/people-are-listening-to-more-new-music-during-coronavirus-pandemic-new-study-says-2667098

[14] Dua Lipa's Very Expensive Concert Is the Future of Live Streaming https://www.rollingstone.com/pro/news/dua-lipa-livestream-cost-viewership-1096950/

[15] The Rolling Stones launch new series of special online performances 'Extra Licks' https://www.nme.com/news/music/the-rolling-stones-launch-new-series-of-special-online-performances-extra-licks-2657976

[16] BLACKPINK's 'THE SHOW' draws 280,000 viewers https://www.koreatimes.co.kr/www/art/2021/02/732_303421.html

[17] Glastonbury live-stream festival: Coldplay, Michael Kiwanuka and Haim to perform https://www.theguardian.com/culture/2021/mar/31/glastonbury-live-stream-festival-coldplay-michael-kiwanuka-and-haim-to-perform

for coronavirus relief.[18] Livestreamed concerts generate a sense of belonging and togetherness for viewers (Vandenberg et al., 2021; Swarbrick et al., 2021). However, the choice of a streaming platform and social features for a virtual concert are highly important, as they affect the connectedness among the audience, as well as the connectedness between the artist and the audience members (Onderdijk et al., 2021).

Ziv and Hollander-Shabtai (2021) investigated four types of "corona clips" that were created by individuals or in collaboration during the first lockdown in March–April 2020 and were distributed among Israelis through sharing on social media. These were *satirical songs* with lyrics referring to lockdown restrictions; *cooperating artists*, where musicians performed together at a distance, usually doing cover versions of uplifting songs, with each artist providing a single part; *concerts in empty halls* without an audience; and *home concerts* in which musicians recorded intimate performances at home. A few days after the first lockdown restrictions ended in May 2020, 200 people (aged 18–40) completed the survey. Most participants were exposed to at least a few "corona clips" and enjoyed them. They enjoyed watching musicians they love in intimate concerts and videos. Nonetheless, when asked whether they thought they would attend live shows in the future, most participants expressed their wish for live shows and concerts to return and reported that they strongly preferred live experiences to streamed concerts. These findings are corroborated by Vandenberg et al. (2021), who found that livestreamed concert participants missed the experience of a real physical concert, that is, the collective energy, the physical engagement, and the environment. More recent evidence suggests that that is indeed the case, as people flocked to physical concerts when restrictions on gatherings were lifted.

Additionally, collaborations between the music and gaming industries received increased attention, as virtual concerts took place in video games. Although such collaborations had existed for a while, the rise in popularity of video games, and multiplayer games in particular, since the beginning of the pandemic (Barr & Copeland-Stewart, 2021) has highlighted more than ever before their potential as a medium for concerts.[19] For example, the hit multiplayer game *Fortnite* introduced interactive in-game concerts by Travis Scott and Ariana Grande, accompanied by special in-game cosmetics and merchandise.[20]

Another domain entirely disrupted by the pandemic was music education and online education (or e-learning) in general. Face-to-face teaching activities were

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[18] One World: Together at Home concert raises $127m for coronavirus relief https://www.theguardian.com/music/2020/apr/20/one-world-together-at-home-concert-lady-gaga-raises-127m-coronavirus-relief

[19] Report: Most important data on digital audiences during coronavirus https://thenextweb.com/news/report-most-important-data-on-digital-audiences-during-coronavirus

[20] Ariana Grande Should Earn A Fortune From Her 'Fortnite' Rift Tour Concert https://www.forbes.com/sites/paultassi/2021/08/02/ariana-grande-should-earn-a-fortune-from-her-fortnite-rift-tour-concert/?sh=7043e295130b; Fortnite, Ariana Grande, and gaming's new musical revolution https://www.independent.co.uk/arts-entertainment/games/features/fortnite-ariana-grande-gta-5-b1898327.html

suspended, with higher education institutes, schools, and conservatories worldwide required to quickly shift to remote learning, challenging traditional music education methods (Dhawan, 2020; Habe et al., 2021). There were a number of critical concerns and challenges. Music teachers were inadequately prepared for the move and insufficiently supported in online teaching. There was a lack of student engagement with online learning, and much teaching of music online was ineffective. In addition, there was a general lack of resources and significant disparities between schools and students of different socioeconomic backgrounds. Finally, technical limitations led to low sound quality, latency, and video delays. Despite the difficulties, music teachers still found this transition to be an opportunity to adapt and innovate in the music learning process, and they acquired skills and technological tools that could be integrated in face-to-face teaching (Daubney & Fautley, 2020; Ozer & Ustun, 2020; Biasutti et al., 2021; Shaw & Mayo, 2021; Hash, 2021; Cheng & Lam, 2021; Joseph & Lennox, 2021; Calderón-Garrido & Gustems-Carnicer, 2021; de Bruin, 2021).

Several new teaching approaches and strategies have been developed during the pandemic. For example, Johnson and Merrick (2020) set up weekly Zoom meetings to support students' well-being and to improve communication and connection among teachers and students. Emotional support provided by the teacher and interaction between teacher and student have a positive influence on students' motivation and engagement (de Bruin, 2021; Waters, 2021). Johnson (2020) built a framework for online music teaching and suggests creating an informal discussion forum for students to develop a peer community and foster enthusiasm. These two approaches affect student motivation, which is vital for overcoming technical challenges and student success. Lemay and Peters (2020) suggest settings in which bands could rehearse together at school while respecting hygiene standards and physical distance: rehearsals should preferably be held outdoors, and special masks should be worn for playing wind instruments.

Over the years, many startups have developed digital tools for music education, intended for music teachers, self-learning, social learning platforms, and more. It seems that the main obstacle in the past has been the market being unready to adopt new methods after centuries of traditional music learning. But the pandemic and the associated lockdowns appear to have brought about a change, as self-learning music application usage has surged. These applications often involve the learner's family in the learning process, making the experience more powerful and unique. Stay at home restrictions during the pandemic enabled families to have a joint experience with such applications. Moreover, a survey conducted in Austria found that two-thirds of the participating music teachers were willing to integrate digital tools to some extent into their music lessons after the pandemic, especially putting learning materials online and using videos (Aigner et al., 2020). While there are some advantages to online music education, we believe that it should only be complementary to face-to-face learning, since synchronized music making is still a challenge and the social aspect of music making could be lost if music education moved entirely online (Lemay & Peters, 2020; Palau et al., 2020; Goetz, 2020; Aigner et al., 2020; Encarnação et al., 2021; Spieker & Koren, 2021).

Israeli music startups that participated in the research emphasized the opportunities presented by the pandemic to every musical sector, in the form of more exposure and revenues, an easier "go-to-market," and higher demand, especially in the amateur market, but also among those professional artists and producers who moved their activities online. Regarding music education, investors, teachers, and parents now better understand the need for new digital learning and creative tools, making it easier for startups in this field. Israeli startups that develop B2C music applications (plugins, educational applications, and creative mobile applications) showed sales growth in 2020. More than half of survey respondents reported that their sales volume had increased to some extent as a result of the pandemic, with almost a third of participants noting a significant increase. Beyond our survey, JoyTunes reported growth of more than 150% in sales since the first lockdown, followed by a successful funding round of $50 million in 2021 from Google and Qualcomm[21]; Artlist enjoyed a successful round in 2020 and acquired its competitor.[22] Our interviews with startup founders affirmed this trend. Of the startups that raise funds at pre-seed or seed stages, 80% reported a growing interest among investors in 2021, much higher than in 2019 and 2020.

While more funding is being poured into the sector, that same money may also represent a threat. Startup founders said in the interviews that the massive amount of funding pouring into the industry made it very hard for small- to medium-sized companies to compete with larger ones, as far as marketing and advertising were concerned. Small startups may therefore be forced to raise more funding in order to keep up with the competition and stay relevant.

4.6 Discussion

Innovation has significantly transformed the music industry time and again, and it will undoubtedly do so in the future. By and large, that innovation was previously driven by external players and factors, and the industry was not able to control the impending change. The most traumatic example was the Internet revolution, which led to the collapse of some areas of the music industry, due to their inability to adapt. The same can be said now. Just as in the examples of the Korean and Japanese music industries in the wake of digitization, the music industry must choose either to embrace innovation and find a responsive strategy or to adhere to the old norms and structures and consequently be uncontrollably disrupted by innovation. In fact, it seems that the music establishment is more willing to collaborate with startups and other innovators today, and there is a potential for more to be done in that direction.

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[21] JoyTunes joins unicorn club with $50 million round led by Google's investment arm, Calcalist https://www.calcalistech.com/ctech/articles/0,7340,L-3910571,00.html

[22] Israeli digital catalog co Artlist buys rival for $65m, Globes https://en.globes.co.il/en/article-israeli-digital-catalog-co-artlist-buys-rival-for-65m-1001353263

Innovation has brought a change in media, but the structure of the music industry and some aspects of experiencing music and teaching it remain the same. Listening to a song, music licensing, music education, and live concerts—these and many more—are still based on decades-old models, structures, and processes. Music startups have long been trying to employ technological advancement to innovate the music business and reshape our musical experience, but they were not well received by the market at first, and investors were hesitant to invest in anything to do with the dying music industry. That situation started to change with Spotify and the introduction of streaming and service-based business models, when the industry was brought back to life. Nevertheless, the music scene was still in need of a catalyst for innovation that would break existing barriers.

In this respect, the pandemic has presented a big opportunity for music startups. The use of technology was significantly accelerated in a short time in every aspect: communication, online education, ecommerce, entertainment, health, sports, and more. It has become more natural to stay at home and use online tools to communicate in various ways, and our habits have correspondingly changed. All music-related activities were forced to adapt and to resort to innovative technological solutions, such as online music learning or virtual concerts. Music consumption and the popularity of musical activities rose sharply during this time, as music was found to alleviate the negative effects that lockdown measures had on people's emotional and mental health, helping individuals to cope with social distancing, isolation, and loneliness.

However, one cannot ignore the challenges incorporated in creating engaging and satisfying virtual concerts and educational music content, since people still seem to prefer physical concerts and face-to-face music education. While virtual experiences are now more accepted by the public, it is too early to determine which solutions will remain with us in some form, even once the pandemic is over. In the case of live events, it is unclear whether virtual events or events that combine both virtual and physical experiences will be as satisfying as in-person physical events. It is possible that there will still be demand for such virtual or hybrid events, perhaps with further enhancements, even if they are not as satisfying as attending a physical performance.

The Israeli music startup ecosystem is in constant growth. Along with the 192 startups we studied, we are aware of the existence of dozens of other ventures that are currently at an early stage. We assume that the maturity of the Israeli ecosystem in general, the growing community of music technologists in the country, the increasing interest of investors, and the involvement of international music firms and institutions will lead to the exploitation of the huge potential for music innovation. The COVID-19 pandemic has shaken the entire music community. It has emphasized and demonstrated the market needs and has led music consumers, creators, students, and teachers to take the next step toward digital experiences. Finally, it has increased the interest of investors in the Israeli music ecosystem, which has seen significant growth in demand for musical applications. Overall, it seems that the pandemic has prepared the ground for new developments that will meet the challenge of shaping our future musical experiences. It is fascinating to see what developments and adaptations will remain in the future due to the pandemic and what more the evolving music startups ecosystem will bring to the music experience.

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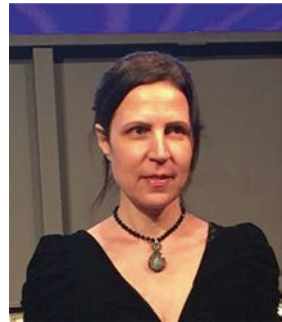
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Chapter 5
An Agile Model of TV Format Development for a Post-COVID World

Check for updates

Michal Ben-David

Abstract The chapter explores an agile model of TV format development, using Dori Media Accelerator as a case study. The project was launched by the Israeli TV company Dori Media Group, during the COVID-19 pandemic, in the period of Israel's second lockdown, in September 2020. The case study is utilized to assess how key business innovation principles, which originated in the tech industry, can be applied to TV format development, drawing on the author's 30 years of experience in entertainment TV and role as consultant and designer on the project. The chapter defines some of the issues characterizing the TV format business and explores how COVID-19 has prompted changes in practices, thus offering a leaner alternative for TV corporate innovation. Fifteen TV creators participated remotely in this intensive 3-month program. At the end of the project, the creators pitched their format ideas to a panel of TV global executives, in an online pitch event. As traditional TV companies face a reality in which the giant digital corporations have become the new intermediaries, disrupting the old model of production and distribution, this chapter argues that there is a need to rethink practices and adapt a more agile TV development process for a post-COVID world.

5.1 Introduction

In the summer of 2020, 6 months after COVID was first discovered in Israel, the country had entered its second lockdown. As other industries, the local TV industry had to adjust to remote work due to COVID restrictions, while facing an unclear future. In this business environment, Dori Media launched its first TV development accelerator, aiming to search for new ways to innovate, do things differently, and

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prepare for a post-COVID business era. Dori Media is a long-standing international content group, based in Israel, with offices in Switzerland, Argentina, Spain, and Singapore. The company produces and distributes movies and programs to a wide range of TV channels and digital platforms, in over 100 countries (Dori Media, 2021).

The objective of the Dori Media Accelerator was to turn unrefined ideas into fully polished paper formats[1] for global distribution (Dori Media, 2021). Following a national callout, 150 creative teams from around the country submitted ideas to the program. After a selection process, six unscripted ideas with global commercial potential were chosen. For 3 months, a cohort of 6 teams/15 creators worked intensively through a guided peer-to-peer development process, meeting remotely several times a week. At the end of the process, the teams pitched their paper formats digitally, to a panel of executives from global TV companies and major streamers.[2] Following the pitch, Dori Media chose to invest in further development of two projects.

As a content innovation consultant, I designed and facilitated the accelerator for the client, Dori Media Group; however, on the experimental level, the project provided me with the opportunity to explore, through practice, a new approach to TV corporate development, based on business innovation principles. This chapter utilizes the project as a case study, from which we can address the question: *how can a more agile and lean development model be utilized in unscripted TV format corporate innovation?*

The narrative builds on primary research, mainly observations and notes taken during the implementation of Dori Media Accelerator, between September 2020 and March 2021, and secondary research, drawing mainly on academic studies, business innovation tools, industry reports, magazines, and interviews with global TV figures, conducted between 2015 and 2016. Overall, insights and interpretations are informed by the author's researcher-practitioner role, industry experience of more than 30 years in entertainment TV, and professional involvement in the project, as advisor to Dori Media. The chapter proceeds by discussing TV format as a formula for business success, before moving on to describe some issues in TV format development, four key principles of business development, and the tech accelerator model. This contextual information presages the case study of Dori Media Accelerator and an analysis of the impact of COVID-19 on TV development remote facilitation. A discussion and conclusions section brings together the various strands of the chapter.

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[1] A paper format is the detailed description of a TV show which has not yet fully developed into a program. According to the EBU Guide to the International Television Format Trade, a paper format describes "the programme proposal as precisely and concretely as possible so that one can imagine how the programme would look on television were it to be produced on the basis of the proposed "paper format" (European Broadcasting Union, n.d.: 64)."

[2] The term "streamers" refers to giant digital companies that stream video content online.

5.2 TV Formats as a Formula for Business Success

From the early stages of the accelerator design, Dori Media's management team viewed formats as global market products. The idea of formats as products places their commercial value on a higher level than their aesthetic qualities, throughout the value chain, from creation and consumption to distribution. In order to put this in context, it is first necessary to define and contextualize TV formats in terms of their business and creative role. TV formats are commonly viewed as duplications of well-tested ideas that can travel internationally and achieve success (Boyle & Kelly, 2012; Lantzsch et al., 2009). According to the European Broadcasting Union's Guide to format, TV formats are "the tried and tested plan that will guide buyers through production – a plan which has been thoroughly developed and set down in a 'production bible'" (European Broadcasting Union, n.d.: 3). According to this view, the industry regards formats as market products, which make business sense as a means to generate profit for the IP owners. Academics however are more critical of formats. For example, Bourdon (2012) claims that formats are related to industrial imitation and capitalism, which have reached an impasse, whereby there is a need to produce the same standardized product at the same time as finding ways to innovate within the standard. In that way, we can understand formats as typical products of a capitalist society, which must duplicate ideas for mass consumption. There is some confusion about the difference between formats and genres. However, formats should be viewed more as the structured form of the story, rather than the genre (TV Tropes, 2021), i.e., the way the story is told. This may further complicate the meaning of formats and their role in unscripted[3] storytelling – a genre which is more adaptable to global formats (Chalaby, 2016).

   While some argue that formats are simple to make (e.g., Moran & Keane, 2008; Oren & Shahaf, 2012), this is a common misconception and in practice far from true. Format creation is a tricky business, which can be difficult and easy at the same time. On the one hand, it may look easy, since formats are basically formulas of stories, which can be copied and localized to fit a specific cultural taste and need (Ben-David, 2018). The talent show formula, for example, is comprised of six elements forming a narrative arc, to tell a story about talented people rising to fame (Chalaby, 2016, 2017). Hence, in theory, it should not be so difficult to imitate this formula, as the developer of the show begins to create the format around basic building blocks such as plot, theme, and narrative, creating the story around them (Bechtold, 2013). Nonetheless, on the other hand, the whole concept of formulas can be risky on a creative level, since it can lead to a strategy of copycatting, building on proven successes (Bechtold, 2013; Ben-David, 2018). The most important thing is to achieve a balance between formulating ideas, while standardizing the story (to enable the format to travel internationally), and the need to create unique stories, which contain enough different ingredients to form an innovative format

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[3] The "Unscripted" genre refers to stories of real people, while the "Scripted" genre refers to stories of fictional characters.

(The Wit, 2016). This, however, is not a simple task, and many fall into the trap of over-formulations.

Formats take months, even years, to develop into a full global market standard product, which makes formats a very risky business, in terms of return on investment (ROI). Companies face this challenge by acting strategically according to the Pareto principle of 80% failure and 20% success, which means to run a business with the knowledge that many of your products will fail or, at most, will not succeed (Ben-David, 2018). Avi Armoza, founder and owner of Armoza Formats, explains this business approach: "This is a business of '80-20,' meaning that 10 to 20 percent of the formats are 80 percent of your income" (Armoza, 2015). In practice, this challenging business strategy prompts companies to invest in the development of many ideas, knowing that most of them will not become hits; however, the successful ones will cover the financial losses (Ben-David, 2018). While the format business is characterized by an uncertain demand, format imitation allows companies to fail at one stage but recoup their investments at another (Bechtold, 2013). This also motivates companies to find new ways to lower their financial risk in the process of innovation. In that respect, Dori Media Accelerator can be viewed as a management tool to answer a common business problem of the TV industry.

5.3   Issues in Format Development

The main objective of Dori Media Accelerator was to develop unrefined ideas for the advancement of global standard TV formats. This goal posed several challenges since format development requires a specific set of creative skills, fresh ideas, understanding of the global market, entrepreneurial abilities, and will to take risks. While format knowhow is crucial for the development of high-quality formats, it was initially assumed by the client (Dori Media) that highly motivated, talented creators who have knowledge of unscripted TV could be trained in format knowhow, in a relatively short time.

To unpack this concept of "format knowhow," it is beneficial to examine how knowledge of format development has been spread worldwide. To begin with, we should look at the early days and the foundation of the industry, where everything started. The format TV industry became a significant global business from 2000 onward, with the launch of four global hits, known as the super formats. These highly innovative pioneering formats—Idol, Who Wants to Be a Millionaire, Survivor, and Big Brother—have transformed the TV industry and formed the foundation for a new global business (Ben-David, 2018; Chalaby, 2016; Moran, 2013). One of the things which characterized the super formats in the early days was their fast distribution around the globe. Within a relatively short time, the super formats were sold to many territories around the world, and later other international TV hits followed this route. What prompted the spread of format knowhow was the "format package" or "format bible" which the buyers of the formats received with their format purchase. This sale package contained detailed instructions on how to create the

format and sometimes also consultancy services that basically helped to build "format knowhow" worldwide. For example, as Chalaby (2017: 5) suggests, "Big Brother was a master-class in multi-media story-telling and multi-platform revenue generation." Hence, this global hit served as an educational tool, both in terms of the way it told a story and its business model.

While it can be argued that a format bible by itself cannot stand alone against a real industry experience, it could certainly shorten the learning curve involved in the show production. Another example comes from Korea, a global format territory which has grown tremendously due to big government investments in the TV format business (Korean International Trade Administration, 2021) and its government agency arm, KOCCA (Korea Creative Content Agency, 2021). Alex Oe, the Korean VP of Asia Distribution at Legendary Entertainment, remembers those early days: "When I was there, which was a really long run, we had Project Runway; then there was Korea's Next Top Model. Those kind of formats really worked. It did very well. It kind of gave the producers and the development teams, the creative teams, [the opportunity] to understand why format works" (Alex Oe, Interview, May 13, Oe, 2016). According to Oe, international formats arriving in Korea served as a support system to grow format skills in the local Korean TV industry. Nonetheless, this process did not happen only in Korea but in other places in the world as well, which helped eventually to standardize practices, build format capabilities, and foster craftsmanship in format development globally (Ben-David, 2018). Ed Waller, editor of C21 International TV Magazine which covers the global TV industry and business, suggests: "I think one of the by-products of the format business is that it spreads, upskills people around the world, because they don't have to worry about development. All they have to worry about is execution of somebody else's idea... and then, a few years after doing that they come up with their own ideas" (Ed Waller, Interview, March 03, Waller, 2016). Producing international formats, creators grew their "format knowhow," which enabled them later to develop their own original formats.

In time, the process of format development became more established and later was defined by four key stages: (1) the creator comes up with an idea, (2) the idea is developed into a written description of the concept called a "paper format," (3) the paper format is developed into a pilot or a TV show which serves as the format blueprint, and (4) the format package is distributed worldwide (European Broadcasting Union, n.d.; Bechtold, 2013). The biggest challenge though for creators has always remained the same—fitting their idea into the global standards and tastes of different audiences and being able to reach decision-makers to pitch their formats.

There is limited available knowledge and a lack of empirical data on how one actually creates a global format (Bechtold, 2013), let alone a successful one. Most format research either focuses on a critique of formats in terms of their cultural contribution to society (Bourdon, 2012; Hill, 2007; Oren & Shahaf, 2012) or analyzes formats as a global market phenomenon (Bielby & Harrington, 2008; Chalaby, 2012, 2015, 2016; Moran, 2006, 2009, 2013). In practice, entertainment formats, which are essentially highly valued commercial products, have formed the

backbone of primetime TV for over two decades and more so following the COVID-19 health crisis, as there is more of a demand for ideas, building on proven successes (Glance, 2020, 2021). This only emphasizes the need to ask why the knowledge of format knowhow is so limited.

To answer this question, we may need to look at higher education traditions on a global level and, in particular, the divide between art and commerce. As Bilton (2012: 12) suggests: "One of the criticisms of specialized arts and media degree programmes is their alleged failure to prepare arts graduates for the commercial realities of managing their creativity as a business asset." This insight might hint toward a bigger issue of formats as commercial products. In my global experience as a higher education lecturer, format creation is taught at universities and media schools, however mostly on the fringe of the core curriculum, as an additional skill rather than an important media discipline. The reason behind this might be the central role of formats as a vehicle of TV commercialization, contrary to the more prestigious genres of drama or documentary, which are commonly perceived as forms of TV storytelling, characterized by more aesthetic qualities. Hence, this may be one reason why formats are less appreciated by the formal education system.

In addition, we should consider the issue of the divide between art and commerce, which has been a long-standing academic debate (Caves, 2000). While in practice content production involves knowledge of both the artistic process of creating the content and the marketing process of selling it, these two aspects are regarded many times as separate departments. Nonetheless, new management studies emphasize the need to bridge the gap between art and commerce, as necessary for business success (Bilton, 2012, 2017). According to this view, for creativity and innovation to flourish, creative teamwork should be integrated into the organizational system, rather than acting separately. More so, what is needed for business success is the employees' understanding of the big picture, so that they can create a more meaningful product that has market potential and makes sense businesswise (Bilton, 2012). The actual creation of format must involve diverse teams from different organizational departments, who can collaborate and forge a coalition around the new idea.

Acknowledging this gap as a global issue, the international format industry created its own support system of bespoke professional training programs, to build format knowhow. One of the first international programs was the Entertainment Master Class (EMC)[4] which was founded by a group of European industry leaders in Berlin in 2008. The EMC's goal is to be "a Master Class created by the industry for the industry, designed for aspiring creators, executives and entrepreneurs who work in the worldwide business of television entertainment" (Entertainment Master Class – EMC, 2021: n.p.). There are other professional training programs worldwide, such as La Fabrique de Formats, in Paris (2021), or C21 Media Content Academy, in London (2021). What is common to these

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[4] The author is a former participant of this program and a current faculty member.

programs is their approach of connecting senior TV people and less experienced creators, to help them acquire skills and format knowhow. A shortage of skills and format knowledge is also addressed by the UK Creative Skillset 2015 report, according to which one of the biggest challenges for the creative media sectors is its primarily freelance workforce. The report provides evidence that freelance workers are less likely to receive professional training, as they are responsible for their own personal development, which eventually can lead to a shortage of skills on an industry level and can negatively impact its ability to thrive (Screenskills, 2021).

So far, three key claims were made about TV formats: (1) TV formats should be evaluated more as products rather than an art form, as their aesthetic value may be secondary to their commercial value; (2) format creation and development are based on industry knowhow and skills, acquired through the production and execution of international global hits; and (3) format creation is a risky and an expensive business with promising returns but also a high chance of failure.

Dori Media Accelerator was designed with these issues in mind, focusing especially on the need to: (1) innovate and reach the market fast, (2) build and upskill early career creators' format knowhow, and (3) make business sense to stakeholders.

5.4 Four Core Principles of Business Innovation

In terms of management philosophy, the project was underpinned by four principles of business innovation, originating from the tech industry: (1) design thinking, (2) lean startup, (3) agile, and (4) go-to-market (RevelX Corporate Innovation Playbook, 2021). The Dutch innovation agency RevelX suggests that these principles have created a shift in how companies in different industries approach innovation. They should be utilized as a blended approach in corporate innovation, since there is no one way which works for all (RevelX Corporate Innovation Playbook, 2021). To understand their role and contribution to the accelerator design, I will briefly introduce them first.

Since the 1990s the tech industry has developed its own system of check and balance, through lean methodologies and various frameworks of innovation. These have helped entrepreneurs reduce risks for stakeholders and have enabled a faster and less risky route to the market (Goller & Bessant, 2017). Innovation design originated at d.school in Stanford University, an institution that helps design students to develop their creative abilities for real-world application, and largely as a result of the early collaboration in the 1980s between Steve Jobs and David Kelley, the founder of IDEO consultancy firm (IDEO, 2021).

According to IDEO, the two pioneers based their approach on *design thinking*, which is a widely used framework of creativity, underpinned by key principles such as user needs, team collaboration, and constant iteration (Goller & Bessant, 2017). In general, design thinking focuses on placing customer needs at the center of

product development and designing a solution for a specific problem or needs (RevelX Corporate Innovation Playbook, 2021). Iteration enables innovators to reduce risk and make more informed decisions, throughout the development process. Years later, this methodology is having a huge impact on how different industries approach the innovation process.

The second principle is *lean startup*, an approach related to manufacturing process, which was initially developed by Eric Ries and Steve Blank. The approach draws on Ries' experience as entrepreneur and the challenges he encountered throughout the innovation process (Goller & Bessant, 2017); lean principles can be applied to every business and management process, as a way of thinking and acting in organizations (Lean Enterprise Institute, 2021). Basically, it is a process of short experiments, testing and then fixing ideas, before scaling up and executing the big project (RevelX Corporate Innovation Playbook, 2021). Lean thinking is beneficial to improve the quality of work, to enhance the flow of the process, and to simplify complexity.

The lean iterative approach is characterized by the third principle: *agile*—a way of working originally designed for software development in the 1990s, however later applied across all the organization (Dery, 2018). An agile approach is characterized by team-based work and structured methodologies. As part of this process, teams need to stretch targets, going through cycles of prototyping and learning (Goller & Bessant, 2017). In organizations, being agile requires people to learn new skills, collaborate, iterate, and bring new solutions. Product validation is at the heart of agility, as constant validation enables companies to gather evidence, learn, experiment, and test new unrefined ideas (Board of Innovation, 2021). For example, a research group in MIT studied agile approaches for 3 years, in more than 50 companies. Their findings demonstrate that the most successful companies were those which used processes of continuous learning through a series of experiments and data collection. Through these processes, they first learned what works best and then developed new solutions (Guinan et al., 2019). Agile is a radical alternative to a more conservative management style which has been spread across industries (Rigby et al., 2016).

Lastly, the fourth concept is *go-to-market*, which relates to the development and execution of a targeted strategy, in order to bring to the market a new value proposition. Hence, it seeks to plan the launch and growth engines ahead of time and to scale up values (Revelx, 2021).

Tech innovations are complex, and therefore there is a need within the industry to standardize innovation processes and help entrepreneurs manage the creative process on scale. Nonetheless, this knowledge and approach can be applied to other industries to improve practices in other domains of business.

5.5 The Tech Accelerator Model

It is common practice in the TV industry to utilize collaborative training programs such as creative incubators for TV development. Nonetheless, accelerators are not common so much in this business. In that respect, Dori Media Accelerator was experimental and slightly different from how TV production companies usually approach development. Before discussing Dori Media Accelerator, we should understand and define what an accelerator is and how it differs from an incubator.

Simply put, an accelerator is a collaborative program whose objective is to boost new ventures at the early stages of an idea (Hathaway, 2016; Nesta, 2013; Zajicek, 2017). Cohen and Hochberg (2014: 4) define accelerators as "A fixed-term, cohort-based program, including mentorship and educational components, that culminates in a public pitch event or demo-day." What characterizes an accelerator is the focus on a rapid and intensive learning program, to compress years of development into a short period of time, generally 3–4 months (Hathaway, 2016). While the most common forms of cohort educational collaborations are accelerators and incubators, people frequently confuse them. Nonetheless, researchers and practitioners alike agree on some key similarities and differences between the accelerator and the incubator models (Cohen & Hochberg, 2014; De Groot, 2018; Zajicek, 2017). We can examine these differences through the following Table 5.1, which showcases the key components of the two product development models.

Table 5.1 Comparison between the accelerator and incubator model

	Accelerator model	Incubator model
Duration	Time limited; short-term program of 3–4 months	Not time limited; long-term program of sometimes 1–5 years
Participants	Cohort-based; open to anyone; teams rather than individuals; participants focused on market needs	Small businesses and individual creators needing support; participants are protected from market forces
Selection process	Extremely competitive; national callout aiming to find the best in the country	Less selective
Training program	Rapid learning process; finish line is pitch to investors; classes and seminars; peer feedback; mentoring scheme provided by the funding company; collaborative environment	Stimulates innovation and sometimes functions as a preparation to an accelerator; focuses on a firm's endurance rather than fast growth; collaborative environment and ad-hoc mentoring; shared physical space
Business model	Funding against percentage of equity (usually by an existing established company); the accelerator has a bigger role in the success of the startup; the accelerator's fund is usually the first of the startup	Funding is nonprofit, mainly to advance local startups and create new jobs; usually does not take equity; firms pay reduced rent in exchange for legal and administrative support

After Cohen & Hochberg, 2014; De Groot, 2018; Zajicek, 2017

Arguably, the most important difference between the accelerator and incubator model is their business philosophy. According to Cohen and Hochberg (2014), incubators are meant to nurture new ventures by sheltering them from market forces, contrary to accelerators, which support new ventures to help them adapt more quickly to market forces. The accelerator approach to the market is paramount to our understanding of Dori Media Accelerator, since its main objective was to bring new format ideas to the international market and to offer an answer to a specific market need.

A slightly different type of accelerator is the corporate accelerator. The consultancy firm Board of Innovation, for example, addresses the corporate accelerator as such: "An innovation accelerator is a program designed to develop, test and grow new business ideas in a few months outside of organizational processes and deliverables" (Bogaert, 2021: n.p.). While this definition implies the hybrid form of this program, which takes place inside the organization, it still operates outside of the regular daily work and routine and thus in many aspects is quite similar to the startup accelerator.

The Board of Innovation suggests that, in general, the corporate accelerator has three key organizational objectives: (1) to accelerate projects in order to eventually select only the best ones, (2) to build internal organizational capabilities to manage innovative projects, and (3) to develop employees' entrepreneurial skills and talents (Bogaert, 2021: n.p.). In view of this, Dori Media Accelerator can be categorized as a corporate accelerator, containing components from the startup accelerator and the corporate accelerator, as the participants were not the employees of the company but rather creative entrepreneurs, selected through a national callout.

5.6   Dori Media Accelerator Case Study

From my early discussions with the Dori Media management team in the design of the project, the managers commonly agreed that this project was going to be experimental for the company. According to Bilton (2012: 19), "In today's creative economy, ideas are cheap – it is what you do with them that counts." In line with this worldview, the managers were keen not to count only on the strength of ideas but to invest in an agile program which concentrated on the creative process as a vehicle for innovation. The text below offers a detailed exploration of the various processes involved in the accelerator, starting with a discussion of the model design, before moving on to the accelerator phases and components. This will lead to a discussion of the impact of COVID-19 on TV remote facilitation and the overall program.

5.6.1 Model Design

As previously suggested, Dori Media accelerator was underpinned by four key principles of business innovation: design thinking, lean, agile, and go-to-market (Revelx, 2021). Nonetheless, as in a blended approach, other storytelling techniques and methods were also employed, to fit the needs of the domain of entertainment TV formats.

The principle of design thinking was utilized in the accelerator, through the use of divergent and convergent thinking, audience needs, and fitting ideas to market segments and taste groups. The principle of lean management was employed in testing unrefined ideas before investing in them and in the decision to scale up and invest in two projects only at the end of the program. The lean approach of the project did not require many resources, as most of the development work was done independently by the creators, while the Dori Media team supported the creators, providing professional feedback and advice when needed. The agile principle was used in the approach to the overall design and management of the program, characterized by formalized processes, strict timetables, team collaboration, and peer feedback. Experimentation was at the heart of the process as creators had to test their ideas constantly and learn from their mistakes. While the principle of go-to-market was utilized as strategy, since Dori Media planned to launch the best products of the accelerator at the MIPTV[5] market 2021 in Cannes, the international TV market was cancelled due to COVID-19 and only partially operated online. Nonetheless, the new formats were eventually launched internationally through the global pitch online event and through bespoke meetings with international clients.

5.6.2 Accelerator Phases

In terms of structure, Dori Media Accelerator consisted of five key phases: scoping, callout, ideation, prototype, and pitch. While the TV accelerator flow was quite similar to the corporate accelerator model, the callout phase was different, as the participant selection process was done on a national level rather than internally in the organization. The overall creative process was not always linear, allowing for necessary adjustments, especially in the ideation phase. Below, each of the components is described in more detail.

Scoping In the scoping phase, objectives and values were defined by the senior management and sales team of Dori Media, through a series of workshops. This

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[5] MIPTV is an important international TV trade market, normally taking place in Cannes, France, twice a year, but not since the outbreak of COVID-19.

process helped the senior team to form a shared understanding of the project's nature and aligned people with its objectives.

Callout In the callout phase, the project was advertised nationally through social media platforms, film and TV schools, and industry professional organizations. More than 150 creative teams submitted ideas, and 6 projects were selected by the Dori Media team to participate in the project.

Ideation In the ideation phase, the 6 teams (15 creators) worked on the development of ideas intensively for several weeks through a guided iterative process. Group dynamics and peer feedback were constantly used to check and fix ideas. In the middle of the period, the teams pitched their projects to the Dori Media international team, received market-oriented feedback, and then improved the formats according to the suggestions.

Prototype In the prototype phase, the six teams created taster tapes[6] which showcased their ideas. By testing ideas with potential viewers through these prototypes, the creators could refine and improve the concepts. This phase enabled them to test their basic assumptions about the formats' structure, story, and tone and adjust them according to market needs.

Pitch In the pitch phase, the teams pitched their formats to a panel of executives from major international TV companies and OTTs,[7] based in four continents. The international pitch event was conducted through Zoom, bringing together creators, decision-makers, and gatekeepers. In addition to the feedback they offered, the executive guests also anonymously graded each of the projects, through an online poll. This evaluation tactic enabled Dori Media to gain as realistic and honest an estimation of the market potential of each of the format ideas as possible, as reflected through the view of the global market leaders. After the pitch, Dori Media announced its investment in two projects out of six.

5.6.3 Accelerator Components

As was presented in Table 5.1, the accelerator model can be assessed according to the following key parameters: (A) duration, (B) participants, (C) selection process, (D) training program, and (E) business model (see Table 5.1). The Dori Media Accelerator case study will now be further examined in accordance with these parameters.

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[6] A taster tape is a short video proof of concept, showcasing the mood and tone of the format, which helps to sell it in a pitch.

[7] OTT stands for over-the-top, which basically refers to providing TV and film content on demand over the Internet.

5.6.3.1   Duration

The overall duration of the Dori Media Accelerator project was 3 months (excluding the preparation phases, such as scoping and callout), which is a relatively fast pace of development, typical also of a tech accelerator. The long creative process of TV format development was squeezed into a much shorter and condensed timeframe. Nonetheless, the 3-month duration posed challenges, as usually development processes in TV take a much longer time, between 6 and 24 months (from idea to market). Overall, the 3-month period had both disadvantages and advantages. On the one hand, the creators faced a huge challenge in terms of the inputs and outputs demanded of them on a daily basis and the tasks they needed to tackle. They had to balance family life and their work on the program, which was not always easy. On the other hand, the 3-month duration had its advantages, since they could push themselves to the limit, however, only for a relatively short period. In practice, most of the creators were able to meet the demands of the project, with minor exceptions.

5.6.3.2   Participants

The tech accelerator is built upon cohort-based participation and teamwork (see Table 5.1). While the Dori Media Accelerator was open to anyone who had some experience in unscripted storytelling, creators were accepted to the program only in teams, rather than individually. This approach is not common in TV as ideas of individual creators can be accepted by decision-makers, and afterward some creative collaborations and partnerships can be formed. Nonetheless, behind this was the view that the strength of the team is the most important for the success of the project. This approach does not claim that good ideas are not important but rather seeks to give more power to teamwork as an engine of creativity. In addition, the participants were required to be not only "creatives" but also entrepreneurs, i.e., people who are able to collaborate in a team, actively move things forward, and have an open mind and flexibility with regard to changes. In practice, this objective was only partially met, as some of the participants struggled more than others in the execution and prototype phases (which require more entrepreneurial abilities).

5.6.3.3   Selection Process

The tech accelerator model is highly competitive and thus was a key characteristic of Dori Media Accelerator. One key principle which was set right at the beginning regarding the selection process was to open the callout to diverse people from different backgrounds, life experiences, and knowledge sets. The objective was to break mainstream group-think and to encourage talents from the fringe of the industry to submit ideas to the program. However, this objective also posed some risks, as less experienced creators with limited industry knowhow could face more difficulties due to the demanding and intensive nature of the program. On the other

hand, a mixed cohort enabled the program to select interesting people from different places and ways of thinking, not necessarily biased by the industry's professionalism. The latter can sometimes hinder the development of fresh ideas, by virtue of having "too much knowledge." In reality, the selection process comprised several stages and was longer than planned, due to the high number of applications and the competitive nature of the program. The six teams which were eventually selected brought relatively good initial ideas, but more importantly, they were highly motivated, demonstrating good teamwork, which counted the most at the end.

5.6.3.4   Training Program

The tech accelerator model consists of sessions and workshops, with an intensive learning pace, ending with a final pitch to investors. These components also characterized Dori Media Accelerator, although due to COVID-19, they were implemented digitally. The most important aspect of the training program was the focus on team collaboration and peer feedback, as key facilitation instruments of the iterative process. During the weekly workshops and one-to-one meetings, the creators were required not only to develop their own projects but also to help their peers by providing them with genuine feedback and support. This facilitation method helped the teams to identify crucial mistakes early on and support each other with practical solutions. An additional benefit was the healthy competition between the teams, as people came more prepared to the weekly sessions, knowing their ideas would be constantly judged by their peers.

The Dori Media professional team was involved in the development process from the conception of the ideas to the final pitch, intervening when necessary, at specific points in the program. The team gave feedback regularly, coming not only by the content department, as usually done in the TV business, but also from the marketing, legal, management, and sales teams. The ability to influence the products through this constant systematic peer feedback motivated internal stuff at Dori Media to be involved in the development process, which will have a big impact on the future products of the company. It also enabled a diverse point of view to be heard with regard to the commercial aspects and approach of the company.

5.6.3.5   Business Model

While the business model of a tech accelerator is "funding against percentage of equity" (see Table 5.1), the Dori Media Accelerator was based on a model of development funding against percentage of IP. The main business sense behind a corporate accelerator is to invest a relatively small sum in the selection process of new ideas, instead of lots of money in the development of a full one or two products, for which market potential is not fully clear. The business model of entertainment TV is similar in essence, since to have one hit, a company needs to invest in many ideas, as the potential for failure is relatively high. The TV accelerator model helps to mitigate the

high risk of investing in global format development. Decision-makers can validate first many ideas through an accelerator program and then make an informed decision and choose the one or two which have the most potential to succeed in the market.

5.7 Impact of COVID-19 and Remote Facilitation

Dori Media Accelerator was executed digitally, through all its stages, from program design to scoping, planning, callout, facilitation, workshops, and final pitch. In reality, the 15 creators who participated in the program met face to face for the first time, only in March 2021, after the lockdown was eased, and the creators were invited to a small celebration at the end of the project.

The impact of COVID-19 on the program will be addressed through the following key aspects: (1) convenience and flexibility, (2) lean process, (3) access to stakeholders, and (4) cost.

1. *Convenience and flexibility*: All creators had full-time jobs and many of them were parents to young kids. Remote facilitation enabled them to participate from home or from anywhere they wished. In spite of their busy lifestyles, this digital flexibility helped them to commit to an intensive program outside of their normal routine, which otherwise might not have been possible. Nonetheless, remote facilitation had its limitations, in terms of the ability of the participants to create more meaningful relationships and networks, an important factor in TV entrepreneurship. While some succeeded in creating some future meaningful connections, most of the participants were less able to break the boundaries of the remote program.

2. *Lean process*: The accelerator facilitation was conducted remotely through Zoom, using as few resources as possible. In terms of facilitation techniques, different digital tools were utilized, mainly Miro, but also others. Although at the beginning the digital tools were a bit unusual for the participants, most of them were able to adjust to this lean style of remote collaboration and in time also improved immensely their digital communication skills. On the downside, agility requires certain prior skills and mindsets from people, which should be taught in advance, as not all can adapt as quickly to this way of thinking and doing. Overall, COVID-19 and remote facilitation also helped the Dori Media international team to participate in an agile creative formalized process which was not typical in their everyday style of work.

3. *Access to stakeholders*: One of the key benefits of the online facilitation was the ability to have easy access to international stakeholders, with minimum effort or cost. As an international company, the Dori Media sales team has offices worldwide. The remote program enabled the team to be involved in the actual product development process and have a real impact on the formats, which they might sell one day globally. One of the biggest achievements of the accelerator was the final pitch online event. In a sense, the situation brought by COVID-19 enabled

a direct and unmediated connection between global executives and aspiring local creators. This has been a unique experience for all stakeholders, as usually global TV executives do not interact professionally with early career creators. Nonetheless, the pitch event brought together intermediators, producers, and creators to participate in an international creative celebration, in the midst of a global health crisis. In that respect, COVID-19 had a real positive impact on the project.

4. *Cost*: COVID-19 eliminated the need of all stakeholders to travel or pay for physical venues, which contributed immensely to the relatively low cost. The online program was supported by the in-house resources of the company and the professional expertise of the international team. The creators contributed their share to the cost burden, through their entrepreneurial abilities and will to spend time and resources on the development of their projects. Nonetheless, this approach has limitations, since such a program can only fit certain types of creators, mostly those who are true entrepreneurs and have the ability and wish to share the burden.

5.8   Discussion and Conclusions

The TV accelerator was inspired by a business mindset that originated in the tech industry, based on a fast, lean evaluation of commercial ideas, at the early stage of development. According to that, ideas should be validated first through a lean iterative process, before taking any big financial risks. Through the Dori Media case study, this chapter aimed to explore the question: *how can a more agile and lean development model be utilized in unscripted TV format corporate innovation?* Simply put, why should a TV company develop an idea for a full TV format, when its market potential is not yet clear and the risk of failure is high?

Discussing the case study, we should consider first the context and business environment in which the accelerator was launched. The emergence of the giant streamers such as Amazon, and Netflix, which have replaced the global TV corporations as the new intermediaries (Bilton, 2017), has prompted many TV companies to rethink their methods and practices. While the global streamers utilize AI technologies to improve market analysis and audience preferences (Netflix, 2021), their sophisticated algorithms help them also to produce successful TV shows that many people want to watch. Naturally, their technical advantage and superiority and their ability to use big data in product development are extremely challenging for traditional TV companies, hence, the need for them to find new ways to innovate and develop ideas for the global market. The Dori Media case study showcased a bespoke TV corporate accelerator model which can help TV companies grow agile capabilities, develop new format ideas relatively fast, assess them with stakeholders, and make more informed decisions, before investing in full products.

One key difference between traditional in-house TV development and the TV accelerator model was the program's lean and agile approach. The model offers

decision-makers the opportunity to rely less on gut feeling and experience and focus instead on peer feedback and validation of many ideas through testing. The involvement of both the international and the local teams of Dori Media in the actual creative process provided the company the opportunity to bridge the divide between "creatives" and "non-creatives," as people from different departments and disciplines were able to contribute to the development process and be an integral part of it.

The tech industry has been regularly using remote work as a standard form of communication between teams across borders. Nonetheless, before COVID-19, it was not so common for the TV industry to work online, as people were used to more personal relationships, formed through face-to-face professional interactions. While the Dori Media Accelerator remote facilitation program was enforced on everybody, due to COVID-19 restrictions, it might have also prompted the project to happen. In a sense, the global health crisis which has created business uncertainty has also created an environment in which experimentation is more embraced. While COVID-19 has disrupted old practices, it has also forced people to think outside the box and open themselves up to new possibilities and ways of thinking. The TV business is an important sector of the creative industries, dependent on people's ideas, initiatives, and collaboration. In that respect, remote facilitation can prove to be beneficial for TV development in the post-COVID era, as a more agile mode of work, involving the exchange of ideas and communicating with less resources.

We can summarize the Dori Media Accelerator case study through seven key characteristics:

1. Fast development – a 3-month intensive program.
2. Mentoring scheme – mentor/facilitator and in-house experts' support.
3. Peer feedback – group dynamics as a content development tool.
4. Iterative process – constant validation and improvement.
5. Entrepreneurial mindset – highly skilled and intrinsically motivated creators.
6. Low cost – minimal operational expenses.
7. Business model – shared IP between company and creators.

Although this chapter explored many of Dori Media Accelerator's advantages, the TV accelerator model also has limitations. First, not all creators are able to adjust to such a fast and intensive development pace, which is also challenging in terms of the required standard and product quality. Some creators might struggle to fit in. Pursuing an agile process requires skills or at least an open mindset to do things differently. Thus, this is something which should be assessed a priori, during the selection process. Secondly, while the focus of the accelerator is on quality teams, it may not always be easy to determine who will perform and who will collapse on the road to success. This criterion is crucial for a successful accelerator and a parameter that should be evaluated in advance. Thirdly, for a corporate accelerator to happen, all stakeholders should commit to the process and style of work, as otherwise there is a risk that the project will not reach its full potential. This can be achieved by providing the company's internal stakeholders with the opportunity to express themselves freely in the scoping phase, when objectives are defined. Lastly, the corporate accelerator cannot replace the full product development process which

requires a more precise professional approach. Nonetheless, the TV accelerator model can be used as an agile management alternative for companies to assess the potential of commercial ideas, before moving on to the more costly phase of product execution. In an industry which regularly operates under tight budget constraints and a shortage of highly skilled creators, ideas can be validated through an accelerator program, and their potential can be assessed and validated by diverse stakeholders, potential customers, and market leaders. This approach to innovation can help TV companies mitigate risks and build more agile capabilities within the organization. As a result, it can be much easier to move on with confidence and develop an idea further into a mature global market TV format.

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Chapter 6
The Challenge of Being Lazy

Oded Napchi

Abstract Throughout the COVID-19 pandemic, video content availability and hours spent at home by consumers were at an all-time high. However, according to Nielsen's research, time spent on total video viewership, traditional television, and streaming combined was perversely the lowest recorded since 2017. According to comScore research, viewers of much-hyped streaming services consumed only a third of the content that traditional TV viewers watched. Furthermore, the streaming view time per viewer did not increase during the pandemic. By employing theoretical models derived from the cognitive sciences and behavioral economics, this chapter attempts to explain this anomaly. It suggests that streaming does not answer the needs of former TV viewers. In large part, streaming answers the needs of the active viewer but does not adequately address the passive. Increased and better-quality content alone is not sufficient for the passive viewer. This chapter argues that to reverse the drop in video consumption requires a new approach to content discovery, an approach which gathers insights based on cultural evolution and network epistemology.

Learning to choose is hard.
    Learning to choose well is more brutal.
    And learning to choose well in a world of unlimited possibilities is harder still, perhaps too hard… (Schwartz, 2005)

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6.1 Introduction

Streaming, under its various guises (OTT, SVOD, CTV, and others), that is, video consumption over IP rather than cables or antennas (hereafter referred to as *traditional media*), has revolutionized the TV industry over the past few years (Lotz, 2018). New studios have added to the mix with more content production than before (Fischer, 2020), leading to unique user experiences such as SVOD and binge-watching. The average US household subscribed in 2020 to over six different services (TiVo, 2020). Many studies suggest the pandemic has accelerated the process of viewers switching from traditional viewership to streaming, with the streaming model apparently achieving its goal of becoming mainstream (Nielsen, 2021b) (Comscore, 2020). However, evidence suggests that the increase in subscribers has not been matched by increased consumption per viewer. Even during the COVID-19 pandemic, in which a significant part of the US population was forced to stay at home, viewers who moved from traditional TV to streaming consumed less content than they previously do (ComScore OTT Intelligence, TV Essentials, Feb. 2019 – April 2020, US). As a result, when combined, the total overall viewership did not change or even declined (Nielsen, 2021b) (Fig. 6.1).[1]

Rogers (1962) hypothesis of innovation diffusion helps to explain the evolution of the streaming audience. Rogers defines technology adoption as a linear
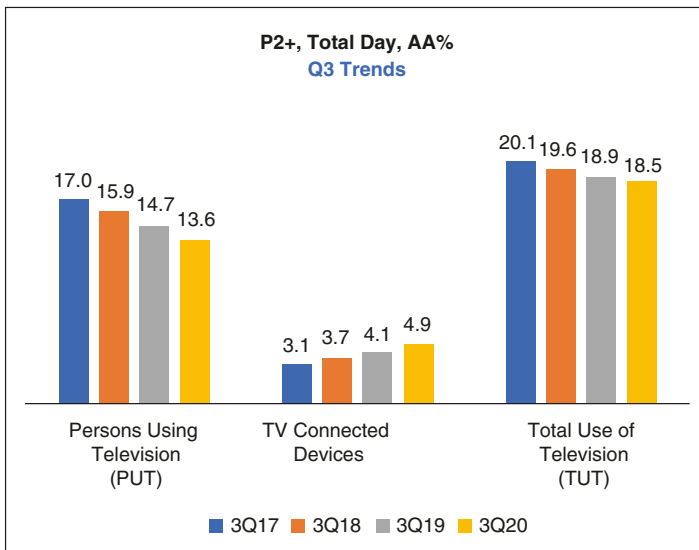
Fig. 6.1 Q3 video viewership trends. (Source: Nielsen's Total Audience report 04.21 (Nielsen, 2021b))

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[1] The quarter analyzed is Q3 2020; for methodology notes, see sect. 6.8.

sequential process in which the success rate of adoption of technology in a segment leads to success in the subsequent related segment. Each segment holds different traits that lead to different acceptance levels. Rogers labeled these segments as innovators (estimated as 2.5% of the population), early adopters (13.5%), early majority (34%), late majority (34%), and lastly, laggards (16%) (Fig. 6.2). Moore (2013) further suggested that the most challenging crossover is from the early adopters to the majority. Early adopters are visionaries who are looking for innovations precisely because they are new. They are the people queuing overnight to buy the latest iPhone on its release day. The early and late majority are pragmatists and conservatives; they are interested in innovation if helpful, consistent with previous user experience, and error-free (Moore, 2013).

In 2017, as streaming achieved 20% of total hours of video viewership[2] (Nielsen, 2021b), the platform became a service for *early adopters*. In 2019, the vast quantity of content produced by the industry's major players (Disney, HBO, Apple, and others) should reasonably have been expected to concur with Rogers's (1962) argument that the early adopters' segment of users would transmogrify into the mainstream. Accompanied by the opportunities the pandemic lockdowns and increase in the user base offered, it was more than just a reasonable expectation; Q1 2021 saw over a billion people globally subscribed to streaming services. In addition, the average household subscribed to over six different services in the USA (TiVo 2020). As of Q2 2021, streaming achieved only around 26% of video
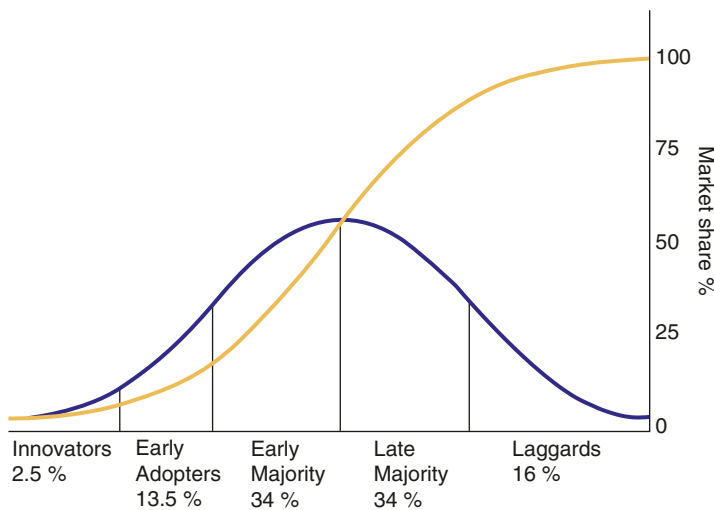
Fig. 6.2 Rogers' diffusion of innovations (Rogers, 1962)

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[2] To clarify, the article refers to viewing time rather than number of subscribers as a reference to the acceptance of streaming services, that is, the number of hours of video consumed is the reference to streaming acceptance and success since many people subscribed to streaming services but do not watch them.

viewership (Nielsen, 2021c), barely scratching the potential of the early majority, while over 80% of American viewers were subscribed to at least one streaming service (Deloitte Insights, 2021). This was also observed in other advanced markets, such as the UK, where streaming did not pass the 25% mark (Ofcom, 2021).

This chapter examines the failure of streaming to become mainstream,[3] even over the COVD-19 pandemic. It is perverse that while streaming user base grew overall in this period, traditional viewers who left TV either did not replace this with streaming or subscription but consumed less than they previously do (ComScore OTT Intelligence, TV Essentials, Feb. 2019 –April 2020, US). Peterson posits at least two types of TV consumers: *passive* and *active* viewers (Peterson et al., 1986). Given these statistics, it is apparent that the streaming offer fails the traditional TV viewer and more specifically the passive viewer, despite their investment in streaming. This chapter examines changes the streaming industry should implement to serve the mainstream public better and seeks to find a recommendation model appropriate to the passive viewer.

6.2 The Argument

The production of ever more and even better content does not in itself respond to the demands of viewers. Behavioral economics proposes a theory of a paradox of choice (Schwartz, 2005) that, in this case, extensive variety of content leads to decision paralysis and low satisfaction with chosen providers. Viewers are forced to actively engage with what provided in their decision-making process which is not consistent with the behavioral preference of passive viewers coming from TV.

The industry leitmotif of "content is king" indeed increases both quantity and quality of choice (Fischer, 2020) but paradoxically places the nature of user experience in second place. The increase in volume changes the nature of the video consumption experience. More and better, while a reasonable strategy from the point of view of providers, does not necessarily align with the requirements and psychology of users. Perhaps the ideology of "content is king" is misplaced?

Traditional television offers a fixed menu, a small selection of content from various vendors. The viewer receives content curated by a programmer and, in most cases, is satisfied. The challenge for the user in traditional TV viewing is to capture the desired content. The viewer must wait for the specific time the show is aired, at the provider's choosing, and then consume it or, alternatively, watch the default content at the time one turned on the TV. An analogy would be a school cafeteria; the pupil can either wait for Tuesday to eat her favorite dish or eat whatever is offered on the day in question. Active decision-making is minimized. In streaming, the experience is of practically unlimited content, available on any device at any time. The challenge now is not capturing the content but choosing what to watch

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[3] Defined as acceptance of at least a half of the early majority audience, 33%.

from a virtually endless list. The child in the cafeteria can now eat whatever he wants. The child must pick. If one asks children what they want to eat, they will do so according to what they may reasonably expect to be offered. If one tells them they can have anything they have ever experienced or dreamed about, decision paralysis will overcome them. Thus, the new paradigm represents a qualitative change.

Cognitive models suggest that there is a clear difference between active and passive decision-making (Maoz et al., 2017). However, the variety of content available today forces viewers to make only active decisions, in contrast to the behavior of passive consumers of traditional TV (Peterson et al., 1986). A potential solution to this is to create a content discovery model that inclines to passive decision-making. *Network epistemology* (O'Connor & Weatherall, 2018) and *cultural evolution* (Mesoudi, 2011) could be posited as models that will enable passive discovery.

The video consumption research data examined below conclusively reveals that viewers are dissatisfied with the current streaming experience. Content search is too strenuous and time-consuming, contributing to a decline in overall video consumption, traditional plus streaming, witnessed by the number of streaming sessions ending without any content being consumed.

6.3   The Market

According to Nielsen, combined video viewership, traditional and streaming, has dropped between Q3 2019,[4] before the pandemic, and Q3 2020, during the pandemic. This trend first became apparent in 2017, when Nielsen started calculating the aggregated consumption time of traditional TV and streaming. In 2017, this average video viewership time was 5 h and 27 min, declining to 5 h and 21 min in 2020 (Nielsen, 2021b). This is anomalous in the light of more time available for consumption over the pandemic and the explosion in content. The data shows that the decline is due to those who left traditional TV and either did not replace it or subscribed to a streaming service but consumed less than they previously do. The average TV viewer watched almost three times as much as the average streaming viewer (ComScore OTT Intelligence, TV Essentials, Feb. 2019 –April 2020, US.)

US viewers are, on average, subscribed to almost nine streaming services resulting in selection overload. Spoilt for choice, viewers change their streaming services constantly, presenting a 100% yearly streaming customer churn higher than traditional TV (Tivo, 2021). This is a clear sign of dissatisfaction as 50% of viewers report leaving a streaming service session without watching a show. A further 20% will stop consuming video altogether, which further confirms the depth of dissatisfaction (Nielsen, 2021b), (TiVo, 2020).

Nielsen and TiVo research suggested the behavior was due to several factors:

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[4]The drop is below statistical significance.

- In the 1980s, selection time took 90 s. However, in 2019 duration had jumped to 7 min, and in 2021, it leaped further to 11 min per title (Nielsen, 2021b).[5] Thus, of each hour-long streaming session, the average time spent in streaming services per hour, almost 20%, is spent on decision-making. This has a corresponding effect on actual consumption, helping to explain the downward trend.
- Only 16% of consumers use recommendation services, and around 50% rely on personal recommendations. Furthermore, according to TiVo (2020), only 38% of viewers find it easy to find content in SVOD services, appearing to signify that recommendation and discovery services are failing in their goal.
- TiVo (2020) also noted that while consuming cable TV, 60% of viewers surf live TV, and 28% are engaged in other activities while watching. On the other hand, streaming services report much lower numbers, 30% and 18%, respectively.

  Based on this data, one can surmise that:

- The variety and volume of content available require an active viewer experience.
- Content discovery algorithms do not adequately meet the needs of passive viewers.
- The decline in actual content consumption can be accredited to the very abundance of content, which creates paradoxically, at least from the provider's point of view, the burden of choice.

6.4 Decision-Making

Viewers have different modes of content consumption, among which both *passive* and *active* viewership modes can be discerned (Peterson et al., 1986). Although viewers are inoculated to favor active choosing as members of democratic-leaning societies, in many cases, they show bias to passive non-choosing mode. Two views support this claim. One is based on behavioral economics and the other on cognitive science.

6.4.1 Behavioral Economic Choices

It is perceived that autonomy and freedom of choice are critical to our well-being and choice is critical to freedom and autonomy (Schwartz, 2005). This supposition seems well supported by decades of psychological theory and research. It has been repeatedly demonstrated, across many domains, that there is a link between choice

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[5] Nielsen, Comscore, and TiVo use different methodologies which means that numbers might be different according to vendor. See sect. 6.8 methodology notes for more details.

and an increase in intrinsic motivation, perceived control, task performance, and life satisfaction (Iyengar & Lepper, 2001).

Americans today have more content choices than ever before and, thus, presumably, more freedom and autonomy. Accordingly, viewers should be satisfied with their new streaming services. However, satisfaction levels reflected in video consumption show a decline over the traditional *passive* television model.

Many crucial social psychology theories, including attribution, dissonance, and reactance, presume that even purely illusory perceptions of choice will have powerful effects (Iyengar & Lepper, 2001). Positive consequences of choice are often apparent even in contexts where the choice itself is trivial or incidental. Conversely, other studies suggest that people find managing complex choices difficult. For example, Shafir et al. (1993) demonstrated that as the attractiveness of alternatives increases, it becomes harder to make a defined choice. As a result, individuals experience internal conflict and tend to delay the decision, search for alternatives, choose the default option, or simply not choose and abandon the process. In the present context, this is observed in the rise in time spent on decision-making which increased from 1 and a half minutes to 11 (TiVO, 2020) and was further evidenced by high churn rates (TiVO, 2021). Studies in consumer research suggest that as options and information increases, people tend to consider fewer choices and process just a tiny part of the overall information available when purchasing (Hauser & Wernerfelt, 1990).

Consequently, by increasing both the quantity of content and the information regarding each item, the intent of streaming services to ease decision-making fails in its objective and actively opposes it. As choice complexity increases, simplicity triumphs over accuracy (Iyengar & Lepper, 2001).

An active viewer looking for specific content such as a "female dominant coming-of-age drama" or even the next episode from one of several favored shows will prefer multiple options. However, a viewer looking for a movie to "chill" after a hard day will likely be dissatisfied with the plethora of choices. The probable outcome will be "opting out," which in the streaming environment is defined as leaving a specific session on one provider and either moving to another or giving up.

Behavioral economic theory has labeled these decision-making profiles as *system one* and *system two* (Kahneman, 2011). The former, arbitrary, operates automatically and speedily, with little or no conscious effort required. In the context of this article, it can be referred to as passive viewership. System two, deliberate, focuses on the strenuous mental activities, including complex computations, that define it and are often associated with the subjective experiences of agency, choice, and concentration. This is active viewership. Cognition science has added to the distinction between deliberate and arbitrary decision-making.

6.4.2   Cognitive Choices

Humans typically experience free will by selecting between alternative courses of action, in this case, when choosing which show to view in a streaming service. However, seminal research by Libet (1983) challenged this common assumption. Libet asked research subjects to choose a random moment to flick their wrist while he measured the associated activity in their brain. Then, to determine when the subjects intended to move, he asked them to watch the seconds hand of a clock and report its position when they felt that they had made the conscious decision to move. The study found that the neural activity correlating to the action took place hundreds of milliseconds and even seconds before the moment the subjects reported having consciously made a decision. That is, the action started before the conscious decision. This finding has been supported in numerous studies using a multitude of techniques: electroencephalography (EEG) by Haggard and Eimer (1999), fMRI by Bode and Haynes (2009), intracranial (Perez et al., 2015), and single-cell recordings (Fried et al., 2011).

Libet described this process of unconscious decision-making leading to action as *readiness potential* (RP). Under his interpretation, a decision to execute an action is made unconsciously. Thus, the perceived human experience of freely and consciously deciding to act is an illusion (Harris, 2012).

Maoz et al. (2017) presented an objection to Libet's hypothesis. They focus on subjects being instructed to arbitrarily move their hand, push a button, or flex their wrist. Thus, their decisions when and which hand to move were always unreasoned and purposeless and with no real consequence. This stands in sharp contrast to many real-life decisions that are deliberate, reasoned, purposeful, and consequential. Unfortunately, there has been little research to assess the relationship between deliberate decision-related neurologic activity, the nature of a subject's conscious experience while deciding, and the neural activity surrounding this experience.

Deliberate decisions typically involve more conscious and lengthier consideration and might be more tightly related to conscious processes than arbitrary ones. Consequently, if the RP is a marker for unconscious decisions, while deliberate decisions are driven more by conscious than by unconscious processes, the RP might be substantially diminished, or even absent, for deliberate decision-making (Maoz et al., 2019). The authors created a study that asked participants to donate $1000 to a nonprofit organization. This deliberate action presented a variety of neural activities. The RP activity reported by Libet, Haggard, and Bode observed researching arbitrary actions was strikingly absent. Their study suggests that the accumulation of noisy, random fluctuations drives the RP function in arbitrary decision-making but not deliberate. They concluded that:

> "[D]ifferent neural mechanisms underlie deliberate and arbitrary decisions, challenging the generalizability of studies that argue for no causal role for consciousness in decision-making to real-life decisions." (Maoz et al., 2019:1)

That is, the action was the outcome of an intended, conscious decision and that the neurological activities related to arbitrary and deliberate decisions are different.

Thus, it is explicable and evident that solutions proposed for active viewers will not be relevant to passive viewers.

6.4.3   Viewer Experience: Conclusion

Our culture presents choice as an essential factor in our well-being. However, as seen, the reality is different, and not all decision-making increases our well-being. Individuals have two modes of decision-making: passive (arbitrary) and active (deliberate). Both behavioral economics and the cognitive sciences, based on neural activity, identify differences between the two. An increase in options and information raises the active viewer's satisfaction but lowers the passive viewer's satisfaction. One can liken this to offering a hungry person a drink. There is nothing wrong with the option itself, but it does not resolve the hunger and just calls attention to it. What solutions can be offered to the passive viewer that satisfies their hunger?

6.5   Content Recommendations

Recommendation engines and other content discovery methods have been created to reduce the activity required from a viewer searching for content to consume. These are potential tools that could bridge the gap between active and passive viewers. However, market research shows that viewers rarely use them (Tivo, 2021) (Nielsen, 2021c). As this is a much-needed service, it begs the question: do viewers, and more specifically passive viewers, require a different type of content discovery? Furthermore, how can one predict a viewer's preferences when the viewer is not consciously aware of what those preferences may be?

Recommendation engines are based on *artificial intelligence* (AI) algorithms which offer up what can be regarded as philosophical and sociological insights. Most algorithms include hypothesis related to human decision-making. Search algorithms, as an example, present a hypothesis about the way people evaluate content. How does a person decide if content A is more relevant than content B? Alta Vista, the leading search engine that preceded Google, claimed that the most relevant content is the one where the searched term is mentioned the most often. Certainty, this seemed a reasonable assumption until Google arrived with a more advanced hypothesis, a concept closely related to *actor network theory* (Cohen & Barabási, 2002). Google claimed that the most relevant content is the one that is referenced the most often, establishing the hub at the summit of the source hierarchy.

The market data presented in Sect. 6.3 would lead one to conclude that recommendation engine algorithms require a conceptual update. The usage of recommendation engines is low and requires a lengthy search process (Nielsen, 2021b) (TiVO, 2021). *Cultural evoluti*on (Mesoudi, 2011) and the *epistemic network model* (Zollman, 2007) could form the core of a new approach to building recommendation engines.

The most common discovery algorithm, *collaborative filtering*, asserts that an individual's preferences can be predicted according to the correlation of data points of others with similar attributes. Typically, over 10,000 data points are used for each user to create a valid prediction, in this case, a recommendation. The process starts with similar weighting for each data point. Then, by employing machine learning, weighting is adjusted to increase accuracy. A further philosophical claim of *collaborative filtering* algorithms is that taste has no intrinsic value. The reason someone chooses to watch a specific movie is based purely on the correlation with others. Personal preferences are removed from the equation. People with similar data points do tend to enjoy similar content. The rationale behind collaborative filtering does not describe the real-world experience; people do not like the same things just because they have same data point. Focusing on the user experience of the passive viewer, what insights can be derived from network epistemology and cultural evolution towards creating new solutions?

6.5.1 Cultural Evolution

Cultural evolution proposes that ideas, like species, replicate and survive if they benefit individuals or groups who subscribe to them. The benefits are primarily based on psychological dispositions, environmental constraints, and affordances (Claidière & Sperber, 2007).

Any member of society can generate ideas, but, as with Darwin's theories of evolution, ideas will be subject to cultural selection. Cultural selection arises from people's psychology, which means some ideas are more likely to be adopted than others (Boyd & Richerson, 2005a). According to cultural evolution, there are three leading causes behind idea preference (Boyd & Richerson, 2005a):

- Content bias. A decision based on the content itself. People tend to better remember violence and gore due to evolutionary needs. Hence violent material has a content bias for better replication.
- Conformity bias. This favors the most popular content or product.
- Model bias. This hypothesizes that individuals make decisions based on the identities of others who use the content or product. For example, a decision to buy a particular pair of trainers could be founded on the athlete who advertises them.

6.5.2 Network Epistemology

The economists Bala and Goyal (1998) developed a network epistemology approach to demonstrate how people learn from their neighbors. This model starts with a collection of agents in the network. These agents must choose among several options. One option is preferable to the rest, but to determine which one is preferable, the agents must either try them and determine the results for themselves or depend on

beliefs and evidence collected by agents connected to them in their network. Bayes'[6] theorem determined the allocation of the agents. In this sense, agents are part of an epistemic community (Goldman & O'Connor, 2019).

Network epistemology sets out to discover how we learn about the world and, more specifically, how we choose where to place our beliefs. In this context, how should an individual presented with several content options determine which to choose? Network epistemology presents two deviations from the classic western view of how people learn about the world:

1. Like cultural evolution, network epistemology claims that the best strategy for achieving knowledge is with the help of other people. This contradicts the western historical concept, most famously presented by Descartes in his *Meditations on First Philosophy* (1637), that the pursuit of truth is an individual activity.
2. Network epistemology embraces variety. Networks exist to represent social or informational relationships in which beliefs and evidence can be shared. This view is opposed to the *diffusion* in Rogers's diffusion of innovations (1962) or *contagion* as appears in the tipping point (Gladwell, 2002), which presents diffusion of only one opinion. In these diffusion and contagion models, individuals do not gather evidence from the world, share evidence, or form beliefs rationally.

It is possible to view network epistemology as an extension to model biases suggested by cultural evolution. Network epistemology resolves a question unanswered by the cultural evolution model: How does an agent decide who serves as the model when there are multiple models from which to choose?

Network epistemology places emphasis on relationships as the foundation of legitimizing testimony, controversy, and trust. O'Connor and Weatherall (2019a) offer similarity of worldview, shared belief, as the basis for deciding how people select sources and, more precisely, defining the borders of model bias.

6.5.3 Content Discovery

Cultural evolution attempts to explain why a person or group of people prefers a specific idea and consequently forecast preferences of someone based on content, conformity, and model biases (Boyd & Richerson, 2005b). Network epistemology clarifies model selection. These models are already used to understand shifts in public opinions and the diffusion of fake news (O'Connor & Weatherall, 2019b). Therefore, it is reasonable to draw two insights from the Nielsen (2021b), Comscore (2020), and TiVo (Tivo, 2020) data reviewed in Sect. 6.3 in assessing which cultural bias is most relevant to the streaming case:

(a) Viewers are looking for a passive solution, as content search became too time-consuming and complex.

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[6] Bayes' theorem is a mathematical formula used to calculate conditional probabilities.

(b) Viewers are dissatisfied with current content recommendations and rely on personal recommendations.

A closer look at the cultural evolution biases helps determine which of them is most likely to contribute to low levels of engagement with content discovery options.

6.5.3.1 Content Bias

Content bias requires high engagement from the viewer. The viewer must watch previews, read the synopsis, or react to thumbnails to determine their final choice. Current streaming engines suggest over 100 options in their home screen that require such massive effort and time for the viewer that it disqualifies content bias as a method for forecasting content.

6.5.3.2 Conformity Bias

This strategy makes good evolutionary sense. As successful behavior should be more common than unsuccessful, it follows that the majority works better than a random approach. When information is poor, either due to lack of access to knowledge or interest in research, conformity presents a quick and cheap alternative to individual trial and error learning (Mesoudi, 2011).

To whom does one conform? Is it the entire population? People in the vicinity? Boyd and Richerson (2005b) suggest that conformity is subject to the group with which an individual identifies. For example, a teenager will more likely be influenced and replicate the behavior and choices of his peer group – reference network – than of his parents.

Conformity has an inherent contradiction regarding recommendation. If the system works based on aggregating data to determine popularity rankings, how can it assess new content as it is added? An individual will likely belong to several reference networks, importing and exporting norms and ideas from one network to another. O'Connor and Weatherall (2018) suggest that a person who is a member of several networks is more dominant within the overall ecosystem than one belonging to fewer networks.

6.5.3.3 Model Bias

Model bias proposes that influence is most pronounced by other users, whether a physical product or a content recommendation. Most model biases are based on either:

- Similarity – preferring ideas from someone who is like oneself
- Prestige – preferring ideas from a successful person (Mesoudi, 2011)

Prestige would appear to be a self-evidently easy path. A sports fan will buy footwear worn by a favorite player. However, prestige also presents a clear challenge. It is often far from easy to determine the assess prestige. As talk radio listeners will testify, two experts will often have contradicting views on subjects such as the benefits of mask-wearing during the COVID-19 pandemic. The effort required for assessing prestige makes it less relevant to the passive viewer.

People regard their worldview as the correct one. Hence, they believe that the opinions of people who share a similar beliefs are likely to be correct (O'Connor & Weatherall, 2019a). It follows that a person perceived to be similar, who holds a particular opinion or possesses superior knowledge, is to be trusted. Similarity bias is easy to assess and so the most effort-efficient bias to them. Social circles generally consist of like-minded individuals (O'Connor & Weatherall, 2018). Obviously, people with different and even opposing views can be friends, but the critical point regards the majority of one's social contacts (O'Connor & Weatherall, 2018).

Zollman (2007) further suggests that influence can be calculated according to Bayes' theorem for calculating conditional probabilities. Viewers will have an intuitive opinion on whether movie A or movie B will bring them more satisfaction. After watching, they present their satisfaction level from their choice with the network, and the network view is updated accordingly. Thus, calculation of an individual's influence on other members of the network is possible.

6.5.4 Presentation

Accurate prediction is also related to the presentation of the prediction; why was it chosen? Collaborative filtering may identify two or more people with similar worldviews, but the data is only helpful if the viewers perceive this conclusion to be correct. Recommendations should be presented as the collective opinion of the perceived peer group to apply conformity and model biases.

6.5.5 Recommendation Implementation

"Consumers don't want more choice but more confidence in the choices presented." (Galloway, 2020)

This chapter seeks to find a recommendation model appropriate to the passive viewer. As demonstrated, neither volume of content nor enhanced information about that content are relevant to these viewers. Bias-based recommendation, the selection dynamics suggested by Boyd and Richerson (2005b) described in Sect. 6.5.1, seems a better candidate.

The biased recommendation approach favors perception over data. Biases become the source of decision-making, with social biases dominant. The *model bias* relates to a viewer's perception of the recommender, while c*onformity* relies on the

frequency of recommendation. Both these biases require less use of data for the user and the platform. Bias-based recommendations should be based on an individual's social relations and perception rather than as attributes of the content itself or correlations of the user profile to other profiles. In cultural evolution terminology, the content no longer drives prediction and instead moves to biases of similarity and conformity. This eliminates the need for thousands of data points on a person, relying instead on a more complete understanding of social connections. The system assigns weight to all members of the network. Some members might even receive negative weight as they present a person with internally contradicting opinions. With each view or consumption, the system repositions the weights based on a Bayesian calculation. A member of multiple networks will receive a higher scoring. A recommendation will receive an even higher ranking if the majority of members of a network share it.

A significant difference between current recommendation systems and the system proposed here relates to perception. Example for initial passive conformity recommendation can be seen in Netflix's local top ten list. These are determined by what the majority are viewing within a geographically defined location. There is a danger inherent to this recommendation bias as it can create an echo chamber that replicates recommendations without adding new content to the network. This could be resolved by utilizing multiple users as hubs that connect to multiple networks.

To conclude, the suggested biased approach reduces options for the viewer and reduced data points needed. Each recommendation now determined by conformity and similarity and followed with an explanation to the recommendation. For example, this video was viewed by four of your friends and is the second most popular program in one's street.

6.6   Streaming in a Post-COVID World

It appears there are two trends in the market: content surplus with the creation of ever more content (Fischer, 2020) alongside market fragmentation (Tivo, 2021). The content surplus challenge can be solved, as suggested in this chapter, by acknowledging the reality of passive viewer behavior combined with significant enhancement of content recommendation and discovery tools.

However, market fragmentation adds a layer of complexity to this solution. As mentioned in Sect. 6.3, the average US viewer uses almost nine different video services (TiVo, 2021), which dramatically enhances the difficulties for user content discovery and for the operator to understand the user better. In addition, the market is currently experiencing its *fat tail* period, where new services emerge constantly and older players must defend their position. Combining these two trends, fat tail and multiple services per viewer, leads to a competitive environment and therefore a lack of cooperation between the various players, a walled-garden model. This lack of cooperation challenges the passive viewer model proposed as a solution in this chapter. If the user must choose between nine different services, each including

numerous channels and thousands of content pieces, the user cannot be passive, and satisfaction will further decline. Data cannot be collected across different providers, thus reducing the accuracy of recommendation services. Each service holds only a small fraction of the total view history of its users and is unlikely to include the user's entire actual social network.

There are two reasons to explain why this market fragmentation is most likely a temporary transitional situation: long-documented experience demonstrates that, over time, in a network-based environment, walled gardens lose to open gardens. The walled garden model dominated the start of the digital ecosystem. AOL, mobile SMS, and others ended up either by knocking down their walls or die within them. The opening generally starts when a platform has achieved a critical mass of users, Rogers' early majority (1962), a point that the streaming services are about to achieve. Walled gardens usually flourish with niche or early-adopter products, again a threshold that streaming is about to cross.

A second explanation is theoretical. In his book *Linked* (2002), Barabási looks at the business world as a complex network comprising nodes and hubs, like the Internet. Barabási observed that these networks resemble physically complex material, like natural gas. Increasing pressure first creates a liquid and then a solid. In relation to networks, increasing the pressure would derive from adding more users, causing the complex system to metamorphose into a more centralized and organized structure which constitutes a *scale-free network*.

In a scale-free network environment, a network whose degree distribution follows a power law, the rich become richer. A social network with more friends than another attracts more friends faster (Barabási, 2002). A music platform with more music will receive more offers to add more music. Applying this model to the video streaming ecosystem suggests that the playing field will include only a few players, countable on the fingers of one hand, with only one dominant network. This is the path that social networks, search engines, encyclopedias, music services, and others have followed and how they are now configured.

At present, and mainly due to commercial considerations, a solution to the *paradox of choice* for the passive user is not yet available. However, all the evidence suggests that the time is nearing.

6.7   Conclusion

The increase in popularity of streaming services has exposed them to new audience profiles. Streaming grew from a model aimed at early adopters to one that caters to the mainstream. The COVID-19 pandemic and associated confinements surprisingly propelled this growth away from the traditional audience.

The existing solutions offered by the services to the problems arising from the increased user base and content items share common characteristics. There have been incremental steps from the base solution aimed at early adopters who were generally active viewers. The new users, arriving later adopters of streaming

arriving from traditional TV consumption, want a passive viewership experience that is unavailable in the current leading streaming services. Using observations from cultural evolution and network epistemology, this chapter proposes a different approach toward content discovery that will meet the needs of passive viewers, an approach that limits the effort needed from the passive viewer. This suggests approach is based on the individual's social relations and perception rather than on attributes of the content itself or correlations of the user profile to other profiles. The needs of the passive viewer can only be met by better cooperation between the streaming providers.

6.8   Methodology Notes

Monitoring electronic media consumption poses a challenge for researchers. Contrary to printed media or movie theaters, there is no method to count everyone viewing or listening to a specific show. During the 1950s, Nielsen originated their *Nielsen rating*, a panel-based method representing the US TV audience, for monitoring viewership (Buzzard, 2012). National viewership is extrapolated from panelists' viewing patterns. For example, if 10% of the panelists from New York watched a show, it is assessed that 10% of the viewing public of New York watched the show. The Nielsen panel system has shortcomings, but since the 1980s, Nielsen has been the monopoly for TV ratings (Buzzard, 2012). Currently, the Nielsen panel includes over 37,000 homes throughout the USA (Nielsen, 2021a).

This chapter used data from Nielsen reports. The data was cross-referenced with TiVo, a leading digital video device manufacturer that has conducted a biannual survey since 2012. The quoted surveys included 4500 participants across the USA (TiVo, 2021). Additional cross-reference was made with Comscore, a leading media measurement and analytics company. Comscore aggregates data from TV set-top boxes and panels.

The period in focus in this paper is Q3 2020, as Q2 of that year marked the pandemic's start where usage was unstable and atypical, and Q4, which covered the 2020 election period and hence viewing patterns are distorted by election coverage.

Since commencing this article, claims were raised by the VAB[7] regarding the accuracy of Nielsen's report on video viewership during the COVID-19 pandemic (Sutton, 2021) (Kenny, 2021). VAB based their complaint on Comscore data. In points where VAB questions Nielsen data, Comscore relevant data was presented. It is still unclear if these complaints have a solid base. However, after careful analysis, if the accusations against Nielsen are proven, it would not require a significant enough data correction to have any material influence on the conclusions.

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[7]VAB is an insights-driven, research, and marketing company dedicated to helping brand leaders make fully informed media decisions that maximize returns, solve business challenges, and drive overall growth (taken from company LinkedIn page).

The central claim of this chapter, the fact that people consume less video content while utilizing streaming services compared to traditional, is clear and present in all three sources. It is also evident in other territories with developed statistical analysis, such as that collected by Ofcom, the British communication regulation authority.

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Chapter 7
The Impact of COVID-19 on the Dispersion of Immersive Technologies and Human Behavior Research and Implementation

Jonathan Giron and Noam Lemelshtrich Latar

Abstract VR (virtual reality) technologies can elicit in participants the illusion of being present in a simulated reality. Throughout history, science and technology have co-evolved in complementary processes. Scientific discoveries have helped develop new technologies, and at the same time, new technologies allowed noncumulative breakthroughs in research. We suggest that VR may revolutionize human behavior research and teaching, almost in the same way that the telescope advanced astronomy and the microscope advanced biological research. During the COVID-19 pandemic, these immersive technologies have scaled in use and adaptation. Academic papers and commercial applications are evaluated in this review. Furthermore, expert individuals are interviewed to account for the true nature of the advancement of immersive technologies due to the pandemic. We show that significant advancements were achieved in the educational framework using immersive technologies. Furthermore, we discuss the elevation in collaborative work using VR, either in large quantities in conferences or smaller groups, as a collaboration framework for coworkers. Next, we discuss the changes and opportunities in behavioral research that result in the necessity to exit the lab and create a global ecosystem to supply participants with remote evaluation methodologies named remote XR. Moreover, we discussed conceptual changes that accrued within the clinical communities that are believed to affect the technological adaptation of immersive technologies as part of clinical work and patient treatment plans and evaluation procedures in the future.

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7.1   Introduction

VR (virtual reality) technologies can elicit in participants the illusion of being present in a simulated reality (Riva et al., 2007), experiencing environments and social interactions as if they were real. The key to understanding the essence of the technology is rooted in the role that sensorimotor processing and body-centered interaction play in this technology (Nalluri et al., 2021). VR head-mounted display devices track head movement in six dimensions (6D) and apply this information to correspond with the visual rendering of an immersive rendition of an environment – resulting in the sense of presence in its participants. VR technologies are part of a new extended reality (XR) ecosystem, which combines VR technologies with augmented reality (AR) and mixed reality labeled together as XR. In this chapter, we shall focus on VR use and dispersion during the COVID-19 pandemic.

Throughout history, science and technology have co-evolved in complementary processes. Scientific discoveries have helped develop new technologies, and at the same time, new technologies allowed noncumulative breakthroughs in research. We suggest that VR may revolutionize human behavior research and teaching, almost in the same way that the telescope advanced astronomy and the microscope advanced biological research. The ability to place participants in a controlled and repeatable environment that allows them to experience ecologically accurate simulations of social interactions makes VR an unprecedented tool for research, teaching, and training. This is true for all behavioral sciences – whether sociology, psychology, political science, communication, management and economics, diplomacy and strategy, government, sustainability, or law. Thanks to the rapid adoption in the industry, after 50 years of research and limited deployment, VR is ready for mass adoption.

During the COVID-19 pandemic, these immersive technologies have scaled in use and adaptation. It is clear that remote learning and collaboration are becoming irreplaceable and expected to expand widely; we will review these advances in immersive technologies in light of the pandemic.

Virtual reality (VR) has emerged as a media technological advancement approximately 60 years ago (Sutherland, 1965) in the form we recognize it today (stereo head-mounted display combined with head tracking based on computer-generated images). The first interactive VR experience that was named VIDEOPLACE was presented in 1975 by Myron Krueger (Mazuryk et al., 2014). Kruger's laboratory offered an artificial reality that surrounded the user and reacted to them (Krueger et al., 1985). The operational technologies have changed and evolved throughout the decades, while the basic operation stayed the same. Users wear the head-mounted display while interacting with the virtual environments that are presented through visual and auditory stimulations. In the 1980s and 1990s, VR technologies was considered the next big thing, gaining the attention of engineers, scientist, celebrities, and business people; albeit this heightened excitement, the hype wore off leaving VR technologies presumed "dead" (Slater & Sanchez-Vives, 2016). In the following years, many technologies were invented, and much research and

Fig. 7.1 Head-mounted display HTC VIVE. (Image by Pete Linforth from Pixabay: https://pixabay.com/photos/virtual-reality-technology-3368729/License free for commercial use)

development were conducted, resulting in a new "spring" for VR technologies, starting with the introduction of the HTC VIVE HMD (Fig. 7.1) and the Oculus Rift Kickstarter project bought by Facebook (Facebook Inc) in 2016. The major advancement was that these devices were considerably affordable and had implemented room-scale tracking with 6 degrees (6D) of freedom and tangible controller interaction. These technological capabilities allowed for high immersive experiences in a fraction of the price and complexity available until then. In the following years, the hype for VR technologies has shifted rapidly, while it was not clear what will be the killer app that would result in worldwide adaptation of VR immersive technologies.

In 2019, Oculus by Facebook presented the first consumer 6D standalone (does not require tethering the device to a computer) VR device named the Oculus Quest (Fig. 7.2). This device was a real revolution in the field that had only seen 6D tethered devices until then. Soon after, with the emergence of the COVID-19 pandemic in the western world in early 2020, Oculus saw a massive influx in the purchase of the Oculus quest. Many new application vendors have risen with the major hardware sales, and the immersive technologies revolution began.

Much can be argued for the faults and benefits of the social effect of the COVID-19 pandemic, but one thing is clear, immersive technologies have gained attention, adaptation, and development resulting from people's inherent need to connect. With the constraints imposed by the COVID-19 pandemic, this was only doable virtually.

The immersive fields that received a boost from the pandemic are immersive learning and education, virtual conferencing, behavioral research, clinical applications, and "exergaming" fitness**.** At Reichman University (RU), we conducted pioneering experiments in immersive education, immersive behavioral experimentation, and immersive clinical applications that will be described in this chapter.

Fig. 7.2 Head-mounted display Oculus quest. (Image by Pete Linforth from Pixabay: https://pixabay.com/photos/virtual-reality-women-4490469/license free for commercial use)

7.2 Immersive Learning

Immersive learning is an experiential training methodology, using computer-generated virtual reality simulation or 360-degree video recordings of acted scenarios or real ones. By applying these methods in the classroom, students reach a level of engagement and active exploration that results in higher training and learning outcomes than in the real world (Bailey et al., 2011). Furthermore, it has been suggested that 360-degree video generates an interplay between memory and perception that results in improved cognitive processes (Riva & Wiederhold, 2020; Robertson et al., 2016).

Immersive learning has been used frequently for workplace training,[1] medical team training,[2] sexual harassment training (Sadeh-Sharvit et al., 2021), and more. Commercial uses of immersive technologies were on the rise for the past decade, even before the pandemic. Among these cases, the use of virtual simulation for education in the classroom (Sholihin et al., 2020) and medical staff training (Izard & Méndez, 2016) has significantly expanded due to the changes caused by the pandemic. The pioneers in this field of higher education immersive teaching were business administration professors from INSEAD business school in France, Fontainebleau, Professor Itai Stern[3] and Professor Niron Hashai[4] and the Innovation Center[5] at the RU together with Actiview VR company (Actiview Ltd). The business

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[1] Strivr.com

[2] Virti.com

[3] Associate Professor of Strategy and The Akzo Nobel Fellow of Strategic Management.

[4] Dean of the Arison School of Business.

[5] https://www.idc.ac.il/en/research/innovation-center/pages/default.aspx

professors reacted quickly to the changing educational ecosystem that resulted in millions of students being quarantined at home and started working on virtual scenarios based on case studies that were adapted to virtual experiences.

Professor Niron Hashai states: "For the last 60 years or so, Harvard-style case studies were one of the most popular ways to teach business concepts in undergraduate and MBA degrees. Such paper-based case studies typically have a protagonist who shares with the readers some real-life business dilemmas. The problem is that students are increasingly tired of reading 30 pages of case studies, and their level of engagement with written case studies is decreasing. I believe it is about time for the next generation of case studies – same principles, but through an immersive virtual reality experience that will allow students to virtually become part of a business experience, become present in the protagonist's workplace (be it production line, board room or store) and get an intimate feeling of the concerned business dilemma" (N. Hashai, personal interview, Oct 25, 2021).

Professor Hashai and Professor Stern use an immersive recording of 360 videos integrated with narrative-based storylines and dedicated class structures that integrate immersive clips as part of the lessons while teaching business strategy and marketing (Fig. 7.3). Students can experience 360 video-recorded case studies instead of reading them. This innovative approach allows for better time usage for the students who did not need to read long and tiresome case studies. Furthermore, it provided better knowledge retention, involvement, and attention of the students by allowing them to experience the case studies firsthand and even guide the path of the storyline together with their professors.

The virtual classroom at RU includes 60 standalone (Fig. 7.3B) 4k 3DOF Pico G2 4K VR devices.[6] An immersive studio was set up within the RU Innovation Center to generate original and relevant content for each school curriculum. The immersive studio worked together with Prof Hashai to design and create the relevant content for his class. The immersive content included virtually meeting three owners of a Tel Aviv Bar while confronting tough strategic decisions on surviving during the COVID-19 pandemic (Fig. 7.4). In addition to allowing students in the classroom to enjoy the VR experience, students were given the option to experience the content outdoors (Fig. 7.3C) and even at their homes while participating in class through video conferencing (Fig. 7.3D). We learned that by providing immersive content at home, we could create similar engagement and attentional effects as if students were in the university classroom. As part of the project, immersive classes were taught at the schools of Law and Psychology, all with original content developed at the RU Innovation Center immersive studio.

On May 21 2020, Educators in VR[7] (EVR), which is an open, global, cross-platform community of educators, researchers, and trainers exploring and collaborating with and in virtual and augmented reality, held the first-ever fundraising event for the Italian healthcare workers (who suffered severally at that time with the

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[6] https://www.pico-interactive.com/

[7] https://educatorsinvr.com/

Fig. 7.3 Immersive learning with Professor Niron Hashai (**A**) at Reichman University; students experience the virtual scenario in class (**B**), outside (**C**), and at their homes (**D**)

overflow of the pandemic rampaging the country). The event incorporated a 24-h English lesson in VR using the AltspaceVR platform.[8] Using the immersive platform, they were able to bring together many individuals, although physically afar, teach them English, and collect donations for this vital cause. Following this, EVR has continued to use immersive technologies to spread education content and conduct conferences to disperse knowledge on the future of spatial technologies and their part in education.

7.3 Medical Training

Immersive technologies for medical training have also seen a surge of use due to the COVID-19 pandemic. As a result of the massive influx of patients and overwhelming work in medical centers and hospitals, there was a need to recruit and enlist tens of thousands of volunteers and retired medical professionals. Immersive technologies proved to be the optimal solution for training this mass of individuals while

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[8] https://altvr.com/: AltspaceVR is the premier place to attend live shows, meetups, cool classes, and more with friendly people from around the world.

Fig. 7.4 Shooting of the virtual scenario at the Imperial Bar in Tel Aviv with one of the owners during the COVID pandemic

refraining from physical contact. Numerous companies have developed VR simulations to train the medical personnel from navigation in new hospital wards, tutorials on how to use specific medical equipment such as ventilators, and even soft skills such as assisting anxious patients.

Furthermore, surgical training has also shifted toward immersive and virtual training scenarios. The social limitation has restricted the possibility of participating in actual surgery, while immersive VR scenarios and mixed reality allow for interactive, stressful, life-like, and thoughtful educational moments without exposing personnel and patients to dangerous contagions. These technologies provide a safe way to practice and train. Furthermore, using VR for medical training allows for scaling up the whole training process through multi-device deployment and scale-out while removing the user's location limitation.

7.4   Virtual Conferences and Remote Work Collaboration

One of the major fields that have shown increased adoption due to the COVID-19 pandemic was that of virtual conferences and immersive conferences. Immersive multi-user technologies such as ENGAGE-VR (https://engagevr.io/), Mozilla Hubs

(https://hubs.mozilla.com/), AltspaceVR (https://altvr.com/), VRChat (https://hello.
vrchat.com/), Spatial (https://spatial.io/), Rec Room (https://recroom.com/), and
more provide for a hybrid platform that allows users to attend the conference while
using an HMD device or desktop. Attending conferences this way allows for both
verbal interaction and environment exploration and interactivity. For example, IMX
2020 (https://imx.acm.org/2020/), the leading international conference for presenta-
tion and discussion of research into interactive media experiences, was conducted
using Mozilla hubs for social interaction, while the lectures were presented using a
video platform.

Subsequently, small collaboration spaces were created to provide remote work
options while staying at home. Forced by the pandemic, many organizations moved
their main operation to collaborative and digital remote work solutions, primarily
based on video conferencing solutions but some events to more immersive experi-
ences. A solution was developed to join remote work video conferencing while
being immersed in VR (SPACES inc.[9]), a mixed reality solution that "teleport"
coworkers to each at-home workspace (Spatio.io[10]), dedicate VR workspaces such
as the ones that glue app[11] offers, and more. These immersive solutions did not halt
at joint conference workspaces but also provided design (IrisVR Prospect[12]) and
collaboration tools (immersed[13]) that can be used while in VR to produce a truly
effective work environment.

7.5 Behavioral Research

The field of behavioral research has suffered significantly with the spread of the
COVID-19 pandemic. Lab experimentation was prohibited, bringing to a halt most
of the social research conducted worldwide. Even researchers who base their sci-
ence on technological tools for experimentations such as virtual social simulations
and manipulations could not continue their work due to mobility restrictions. The
necessity to overcome the limitations and continue critical scientific work has
brought novel solutions and possibly hastened the field's evolution to more ecologi-
cal (valid in real life) and widespread virtual behavioral experimentation. As
described by Steed et al. (2020), the risk of COVID-19 or other contagions while
conducting behavioral experimentation and data collecting using VR devices has
caused this field to a halt entirely with the emergence of the pandemic. New experi-
mentation and dissemination methods were developed to overcome the exposure
risk of the general population. This new approach is termed remote XR studies

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[9] https://www.viveport.com/6311e4c1-7a67-4995-a35f-c05afb656af9

[10] https://spatial.io/

[11] https://glue.work/

[12] https://irisvr.com/

[13] https://immersed.com

(Mathis et al., 2021). Long-distance experimentation protocols were developed, and technological methodologies were applied. Participant pools were gathered globally, and sharing of information has been raised within the community (Garcia Estrada & Prasolova-Førland, 2021). The chosen methods have drawbacks, but resulting from the need to continue conducting behavioral research, many new perspectives to immersive behavioral research have emerged (Steed et al., 2020). It is suggested that remote XR research might result in the golden future of human-computer interaction (HCI) research (Mathis et al., 2021). Two types of research can gain from these novel remote experimentation methods. The first is XR interaction studies that deal with the technological and experiential evaluation of the technology, and the second is using the technology as a proxy for real-world research (Mathis et al., 2021).

Advancements were made to transfer known psychological paradigms (real-world research) into VR, showing the high validity of such immersive simulation to substitute tabletop collaboration (Saffo et al., 2021). In their study, Saffo et al. show that replicating two studies measuring collaborative work running in VR and another in person produce similar valid results. Furthermore, as stated by the authors and suggested by Steed et al. (2020), remote recruitment of participants proves to be easy and with high value.

7.6   "Exergaming" and Fitness

Another field that has gained attention due to the COVID-19 pandemic is the world of use of "exergaming" and fitness. Those refer to the use of VR scenarios for exercise and fitness activities. As most of the global population suffered long-duration quarantine, people's need for physical activity has grown critical. It is well-known that mental health and physical health are connected (Ohrnberger et al., 2017). Therefore, maintaining adequate physical activity is crucial for the mental and physical state of individuals. In a study conducted by Siani and Marley 646 participants from 47 countries, data was collected regarding the physical strain resulting from the use of different media platforms such as VR and console gaming. The results of the study show that the use of VR applications results in higher physical intensity than other mediated technologies such as console gaming (Siani & Marley, 2021). This finding emphasizes the possibility that VR activity can assist in keeping individuals physically active, which affects their physical and mental state, albeit being in a lockdown situation. Numerous VR applications fit the goal of home exercise, and their use has shown rise during the pandemic. Because VR, as opposed to other media platforms, requires active participation from users, it is almost always physically beneficial to practice it. The Virtual Reality Institute of Health and Exercise[14] and the San Francisco State University's Kinesiology department are set

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[14] https://vrhealth.institute

to determine the exact exercise potential of VR and augmented experiences. The institute provides users with the ability to evaluate the potential of their VR experiences and even track their exergaming through a dedicated app.

7.7   Clinical Immersive Applications

The use of immersive environments and simulations in psychological clinics has been discussed and evaluated in-depth well before the onset of the COVID-19 pandemic (Riva, 2020; Slater & Sanchez-Vives, 2016). Relevant fields that were evaluated are the treatment of different anxiety disorders (Maples-Keller et al., 2017), post-traumatic stress disorder (Gonçalves et al., 2012), treatment of individuals on the autistic spectrum (Mesa-Gresa et al., 2018), and more. Albeit this, conceptual adaptation and actual integration did not happen in this field. Integration of technology in general and immersive environments in particular is not well accepted in the clinical framework. However, as Professor Anat Brunstein Klomek, clinical psychologist and the Dean of the Ivcher School of Psychology at Reichman University, states: "Due to the covid-19 pandemic, understanding the opportunities in remote therapy and openness to the integration of technologies in therapy had changed significantly, complete adaptation is still distant, but changes in acceptance are massive and significant. The covid-19 pandemic changed clinicians approach to using an assistive technological tool in general and immersive technologies specifically. Before, it was believed that immersive simulations might replace conventional therapy methods. This notion naturally leads to great resistance from the community. During the pandemic, however, the whole clinical world has also shifted to remote and digital tools. As a result, clinicians are starting to realize that although immersive technologies will not replace conventional treatment, they may serve as a complementary addition to it" (A. Brunstein Klomek, personal interview, Sept 10, 2021).

Dr. Shiri Sade Sharvit, associate director of training, Center for m2Health, Palo Alto University, says: "Virtual technologies can allow for the extension of the psychologies job. Beyond assisting him in a session, immersive technologies can help patients track their ongoing concerns in real time, assess individual distress levels in regards to specific triggers such as assessing objectively how disturbing specific triggers are to him or her such as sexual harassment (Sadeh-Sharvit et al., 2021, Fig. 7.5) or dieting messages (Sadeh-Sharvit, 2019) Integrating immersive technologies as part of the clinical work provides us with the opportunity to review progress and identify symptom increase quickly between sessions, and also intervene when needed (Bell et al., 2020). Before the covid-19 pandemic, educating clinicians and clients that technology could be useful was a significant challenge. Today they are more open to adopting novel technologies in their work and in self-help mechanisms without the clinician facilitation" (S. Sade Sharvit, personal interview, Sept 20, 2021). According to Dr. Sade Sharvit, during the COVID-19 pandemic, many practical self-help VR apps have mushroomed and adapted as part of many individuals' mental health routines.

Fig. 7.5 Job interview simulation used for clinical studies at the Advanced Reality Lab at Reichman University. This simulation was used for the immersive sexual harassment job interview described by Sadeh-Sharvit et al. (2021)

Commercially a few companies such as XRhealth[15] have gained much traction due to their library of immersive treatments through VR devices. Their library even includes a unique protocol for post-COVID rehab for those who suffered from the illness. Virtual therapeutics have also gained traction while the population was secluded in their homes, and VR was the only way to experience in an immersive manner the outside world. A thought-provoking example of this is the COVID feel-good immersive video project that is translated into multiple languages (https://www.covidfeelgood.com/).

7.8 Summary

COVID-19 and the global lockdowns provided unique opportunities for utilizing immersive technologies as tools for research and teaching in all fields of social and human health sciences.

VR technologies can elicit in users the illusion of being present in a simulated reality (Riva et al., 2007), experiencing environments and social interactions as if they were real. These capabilities proved to be valuable during the COVID-19

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[15] https://www.xr.health/

pandemic in several fields. We have shown that significant advancements were achieved using VR immersive technologies in the educational framework. RU (Israel) and INSEAD (France) have initiated a dedicated framework integrating immersive content production and experiencing during lectures. This content can be experienced remotely and, in the classroom, with the same standalone VR device (Pico Entertainment Inc.).

Furthermore, we have discussed the elevation in collaborative work using VR, either in large quantities in conferences or smaller groups, as a collaboration framework for coworkers. Next, we discussed the changes and opportunities in behavioral research that result in the necessity to exit the lab and create a global ecosystem to supply participants with remote evaluation methodologies (Steed et al., 2020) named remote XR. Moreover, we discussed conceptual changes that accrued within the clinical communities that are believed to effect technological adaptation of immersive technologies as part of clinical work and patient treatment plans and evaluation procedures in the future.

The evidential side effect of the COVID-19 pandemic on immersive technologies was mainly to boost community acceptance and openness to new methodologies using these technologies. As explained, this was evident in the world of higher education and clinical mental health. One of the limitations to full adaptation stems from the current stage of hardware dispersion. Although affordable, the standalone VR device has not reached most homes or institutions, and until that happens, the connectivity barrier is critical. The second limitation stems from the limited content available and the limited number of content creators available. As mentioned above, access to VR and, therefore, the development of VR applications was scarce until the past few years. Now with the worldwide hardware adaptation, this is beginning to change. Content will be produced by scientists and computer engineers dedicated to user experience design that will create the language of VR applications. According to Professor Doron Friedman, Head of the Advanced Reality Lab, Sammy Ofer School of Communications in RU, Israel, VR adaptation during the COVID-19 pandemic happened mainly in the worlds of virtual environments for multi-user and online experiences (D. Freidman, personal interview, Sept 25, 2021). These immersive experiences provide novel ground for social interactions. VR created a safe space for social interaction for the population that was held under lockdown. Considering that most of the world was locked down simultaneously, this created a possibility to connect with individuals worldwide and perhaps lower the cultural distance between different populations even further.

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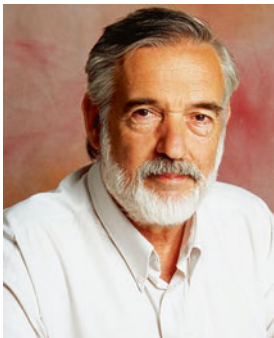
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Lemelshtrich Latar is the Chair of the Daniel Pearl International Journalism Institute.

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Chapter 8
The Future of Museums: The Post-Pandemic Transformation of Experiences and Expectations

Cynthia Goodman

Abstract This chapter examines how the COVID pandemic has transformed art experiences and expectations in museums. While the vast majority of museums remained shuttered for what seemed like an interminable amount of time, many closed not just until the risk of COVID diminished but also forever. Also discussed is how COVID impacted the art world outside of institutions in art fairs, art centers, and festivals. Experiential art centers and their new role in art viewing are highlighted in this chapter. The enormous impact that NFTs are having on how artwork is collected and sold is discussed. It is concluded that museums need to pursue and incorporate the pervasive digital imperative punctuated and reinforced by nascent technologies to remain relevant to an increasingly disengaged and sophisticated audience that is the mainstay of their existence even if only virtually.

8.1 Introduction

No aspect of our lives has remained unscathed by the coronavirus pandemic, and the dramatic impact on museums and other cultural institutions has been transformative. Not only has the extent of change been remarkable but also the alacrity. While the vast majority of museums remained shuttered for what seemed like an interminable amount of time, many closed not just until the risk of COVID diminished but also forever. On April 27, 2020, in a blog posted by the Center for the Future of Museums of the American Alliance of Museums, Scott Stulen, CEO and President of Philbrook Museum of Art, proclaimed: "The museum we closed will not be the museum we reopen" (Stulen, 2020). Stulen's statement was equally applicable to most museums that survived. An unprecedented reliance on virtual visitation and programming as well as increased dependence on digital components for education, entertainment, reaching, and maintaining audiences is central to the metamorphosis

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digital museum platforms experienced since spring 2020 and is also pivotal to digital developments in our post-COVID world.

Numerous museum professionals warily embraced the new digital technology at first both as a means of recording and making their collections accessible to the public in unprecedented ways and also as a tool with a role in the art-making process. Unlike other art historical milestones, the first time that a computer was used to make art is difficult to pinpoint (Goodman, 1987). However recent research by Alvy Ray Smith, published in his 2021 book *A Biography of the Pixel*, attributes the first digital picture to an array of pixels that British engineer Tom Kilburn created on the face of a cathode ray tube in 1947 that Smith calls "first light" (Smith, 2021). However, it is widely recognized that in 1959 when the Calcomp digital plotter, the first commercial plotter, became available, the era of computer graphics was ushered in. Most early computer graphics were made by scientists and engineers using the tools for functional applications. However, both their graphic designs and those of the limited number of artists, who had access to the requisite digital tools, were grouped under the misleading misnomer "computer graphics." The confusion was intensified, because the military quickly grasped the potential of the computer as a graphics tool, and most early research was supported by the Defense Department. Major research facilities like Bell Labs and Xerox Parc were also hotbeds of computer graphics experimentation. A. Michael Noll, a scientist at Bell Labs, who had a predisposition for experimenting with the capabilities of huge computer graphics systems to mimic artworks by modern art masters like Mondrian, wrote software that made it difficult even for art scholars to discern between a drawing of the master and the computer-driven plotter output his programs generated, when both were presented as black and white copies printed the same size, on plain paper (Fig. 8.1).

8.2   COVID Impacts the Museum World

Today digital technology is as omnipresent in the art world as in the rest of our lives, and digital engagement has been imperative for museums during the COVID crisis. Analogous to the ramifications in many other sectors of our society, the long-term impact of this digitalization will be irreversible. This exponential shift is exemplified through the increasingly widespread embrace of virtual tours, live streams of museum events, and other online options concerning information about works in the collections as well as museum programs.

The endorsement of the art world establishment is patently evidenced by their embrace of Google Arts and Culture (artsandculture.google.com). With the collaboration of the respective institutions, Google has made more than 2000 virtual tours of cultural organizations and more than 10,000 locations and 100,000 artworks accessible to audiences 24 hours a day without an entrance fee. Google's online Museum Explorer simply asks visitors to their Arts and Culture site, "where do you want to visit today," and then, once a destination is selected, effortlessly takes them

Fig. 8.1 A. Michael Noll. Computer Composition with Lines, 1964. (© AMN 1965)

there. At a time when museums are closed and travel is restricted or prohibited entirely, museum visitation is available at our fingertips on Google's site. Google has also assisted museums with image and data capture, recorded selected artworks in high definition for close inspection, recorded stunning visits to cultural sites in 360 degrees, and even provided a coloring book and a visual crossword puzzle, to entertain and captivate visitors of all ages on their website. In addition to the numerous applications available on the Google Arts and Culture site, Google's commitment to the arts goes even further. They have also established the Artists + Machine Intelligence (AMI) program, which brings artists, engineers, and academics together into the world of artificial intelligence to open new perspectives and to challenge accepted ways of thinking about AI. According to Kenric McDowell, co-lead of AMI with Eva Kozanecka, AMI lets the artists "lead the way and provide legitimacy" to the program where "artists get it in a way scientists don't" (McDowell, 2021).

Google's sponsorship has provided critical support for a number of artists including Refik Anadol, Casey Reas, and Tom White. Reas, whose work exemplifies how generative concepts can be incorporated into artistic language, co-created Processing with Ben Fry, an open-source programming language and environment for creating images and animation which has become a central tool for many generative artists. *Compressed Cinema*, which was shown at the Walker Art Center in 2020, was an outgrowth of the work that Reas accomplished under his Google grant (Fig. 8.2).
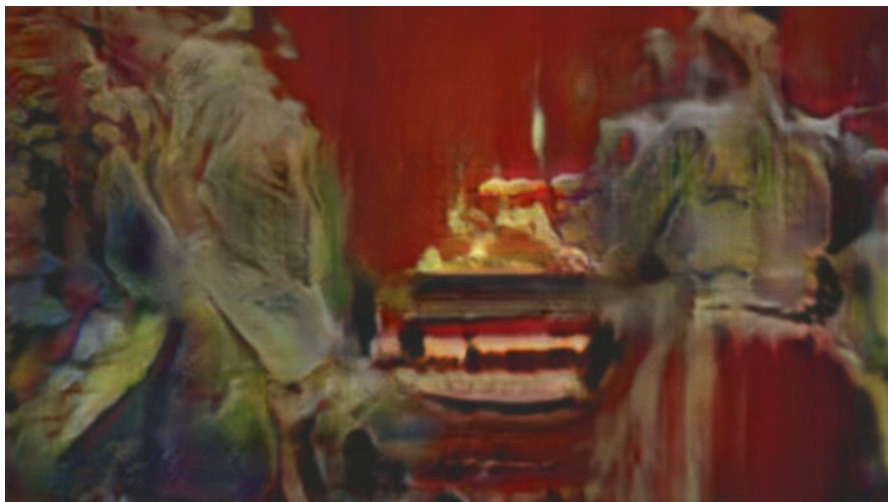
Fig. 8.2 Casey Reas and Jan St. Werner. Untitled 3 (I Withdraw). 2020. HD and 4K video. Frame from Compressed Cinema

Funding on the scale that corporations like Google can offer is essential to create AI-based systems which require the skills of a wide range of disciplines to implement in addition to the artist including math, linguistics, neuroscience, robotics, and machine learning.

Prior to the COVID pandemic, a new immersive art form had begun to proliferate that necessitated teamwork on a similarly grand scale as well as significant funding. Also notable is that most of these works, which are attracting considerable global interest, are not shown in traditional museum centers but in startup EACs (experiential art centers) that are springing up around the world: Superblue in Miami, Fl; the Artechouse venue in New York's Chelsea Market as well as in Miami Beach and Washington, DC; teamLab's spaces in Japan, China, and South Korea; and Meow Wolf in Santa Fe, Las Vegas, and most recently in Denver.

Hopefully, many of those for whom an in-person visit to a museum was intrinsic to their cultural lives and education will return to their former pattern of behavior. And this return is critical because of the irreplaceable role that museums play by preserving works of art for posterity. Yet a growing number especially from today's youth, who still seek direct contact with art, may well eschew traditional visitation to cultural institutions large and small, to visits to one of the many experiential art centers, where they cannot only view but also engage in the art experience by buying a ticket for a specific entrance time. Visitors to the new breed of dedicated EACs as well as museums that tend to have smaller-scale immersive exhibits either incorporated in a larger exhibition or else shown as a solo display will share and experience the installations on view that surround and immerse them in an unforgettable, multi-sensory digital extravaganza.

Media artist and director, as well as researcher in UCLA's Department of Design Media Arts, Refik Anadol first garnered widespread attention in 2019 when he won the Lumen Prize Gold Award for Art and Technology for a data-driven sculpture. Anadol produced *Machine Hallucination* in 2020, as the inaugural exhibition in the Artechouse space in New York's Chelsea district (Fig. 8.3). According to Anadol, this large-scale spectacle, which incorporated AI and machine learning in its composition, demonstrates "…how as an artist I can take my brush and put it in the mind of a machine and paint with machine consciousness" (Anadol). Artechouse also has founded venues in Washington, DC, and Miami Beach, FL, and plans to exhibit works at the intersection of art, science, and technology in all three locations.

The power of experiences was described in an article in *The Harvard Business Review*, by B. Joseph Pine and James H. Gilmore, co-authors of the influential *The Experience Economy*, published in 1998. They wrote: "Experiences have always been at the heart of the entertainment business….But today the concept of selling an entertainment experience is taking root in businesses far removed from theaters and amusement parks. New technologies, in particular, encourage whole new genres of experience, such as interactive games, Internet chat rooms and multi-player games, motion-based simulators, and virtual reality. The growing processing power required to render ever-more immersive experiences now drives demand for the goods and services of the computer industry" (Pine & Gilmore, 1998). Apparently the powerful enticement of immersion permeates numerous sectors.

Despite their inalienable appeal, virtual worlds encompass a plethora of challenges that are intimidating. VR headsets as well as the software that runs them often have technical issues that make ease of use challenging. Augmented reality (AR), on the other hand, is appealing because it requires only a smartphone or iPad as well as a downloadable app to run the AR encounter. The user simply holds up

Fig. 8.3 Refik Anadol. Machine Hallucination. Artechouse, NY. Copyright Refik Anadol
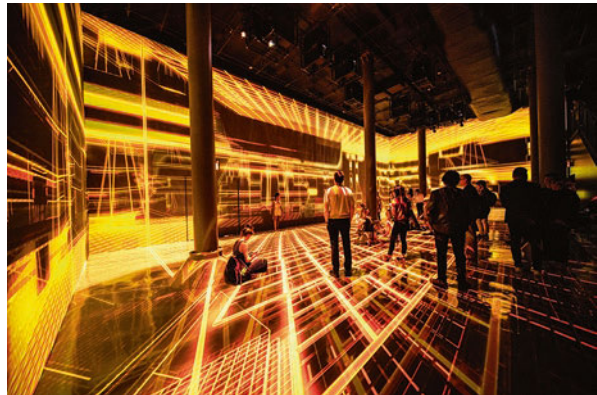
their tablet or smartphone in front of the subject and additional information or a related work, for example, come into view. Users quickly adapt to using AR and are adeptly and enjoyingly engaged within minutes. In the future, as the cost of headsets decreases, and the number of people who own and are familiar with headsets increases, in all probability users will bring their own headsets to exhibits that require them or else be able to initiate the experience wherever their headsets are located.

Judging by its appeal to museum visitors, gamification of museum experiences with Minecraft as well as other popular gaming software will become an entrenched museum pattern post-COVID. According to Manuel Charr, who wrote an article about how museums are using Minecraft, the Tate Gallery in London was among the earliest institutions to incorporate Minecraft into their education program (Charr, 2021). Similarly, when the Victoria and Albert Museum in London was opening a new entrance in 2017, it also lured gamers with a Minecraft version of the V&A's architecture so that players could design their own new entrance to the museum in a virtual workshop setting.

Throughout the COVID crisis, social media has also been an especially powerful tool for museums and other cultural institutions to engage with their audiences. One of the most captivating applications was developed by the John G. Shedd Aquarium in Chicago. The Shedd's staff was still going into the aquarium to care for the animals even though the institution was closed to the public. They decided to allow some penguins including the popular Wellington, two macaws, and a porcupine to roam freely about the museum, while their adventures were captured via video and then posted on Twitter. Both children and adults followed and were fascinated by their adventures, and millions of views were generated by this novel opportunity to view these creatures' unrestricted antics. Interestingly, just as we missed cultural outings and human interaction, the animals were missing socialization with aquarium visitors.

Amid the often overwhelming, depressing, and cataclysmic societal COVID changes, museum visitation is just one component of the art world that has been shattered as doors were shut, countries closed, and travel banned. Galleries, auctions, art fairs, and festivals as well as the very mechanisms whereby art is sold and collected have also been forcibly impacted.

Just as most museums have made their collections accessible online and art fairs have also developed virtual counterparts, a new breed of collectors is no longer opening their homes as a showcase for the work they have collected or building namesake museums to house them. Instead, Paris collectors Sylvain and Dominique Levy, for example, display their extensive collection of contemporary Chinese art, entirely online in a VR installation, launched in 2016 and known as the DSL Collection Virtual Reality Museum. The gallery's striking computer-generated contemporary installation was the first private virtual reality museum in the world. Stunning contemporary galleries, some of which offer views of the artworks through glass walls, showcase their extensive contemporary Chinese painting collection (Fig. 8.3).

Attendees who excitedly anticipate their annual visits to Art Basel in Europe, Tokyo, as well as Miami, FL; Ars Electronica, a major festival of art, science, and technology, that was initiated in Linz, Austria, in 1979; and Burning Man in the Nevada desert, were disappointed by their cancellation because of COVID restrictions and eager to find alternative ways to participate in 2020 and 2021. A frequent solution was to move much of what was planned and make it accessible online. Consequently, 2020 materialized as the year of endless Zoom meetings with art world participants, virtual art lectures, and virtual art tours.

Burning Man was among the major festivals that took a hiatus in 2020 and 2021, instead authorizing an online event, BRCvr2020 and then BRCvr2021. Attracting devotees each year since 1986, the first events were held at Baker Beach in San Francisco. Central to the festival, and one of many artistic contributions is the actual burning of a wooden sculpture of a man. In 1990, fearful that the 40-foot-tall burning sculpture might ignite something else, the San Francisco police put an end to the activity, and Burning Man relocated to the Black Rock Desert in Nevada. Although nothing can replace the atmosphere at the dust-soaked drug-amplified Burning Festival that takes place annually in Black Rock, for the second year in a row, in 2021, organizers cancelled the in-person event in favor of a virtual happening. Capturing the spirit of this somewhat radicalized festival, the Burning Man website proclaimed: "Whether you're a first-time Burner or veteran, right now you can dive into all the radically inclusive magic of the Virtual Worlds of 2021 Virtual Burn (created by the community for the community). Now through Sept. 7, 2021, YOU can connect, create, and immerse yourself in all the dusty VR experiences with virtual Burners from all over the world!" (www.Burningman.org).

Visitors could attend either on their computers and iPads or else via Oculus Quest headgear that transported them to the festival's activities including the art displays. The participating artists included Darcy Gerbarg, who has long been established as one of the leading pioneers in the digital art field. Her interactive and immersive BRCvr2020 and 2021 art worlds, accessible on AltspaceVR, include a selection of her brightly colored, lyrical, abstract, digital paintings and sculptures, painted in a virtual world and installed in a vast 3DVR space. Her exuberant sculptures, which are constructed of swathes of paint, invite visitors to fly around and through them while experiencing their own unique musical compositions. To complete her virtual artworld atmosphere, Gerbarg stages lectures and events in her space attended by avatars (Figs. 8.4 and 8.5).

8.3 Museum Adjustments to COVID

Once again in 2021, museums opened their doors for in-person visitation, and art events were planned including gallery exhibitions and festivals. For safety precautions, masking is a frequent requirement for admission, and proof of vaccination will inevitably become more common. As an example, Future Fair, held in New York's Chelsea district in fall 2021, is a new art fair, whose planned debut in

Fig. 8.4 DSL Collection VR Museum. (Courtesy: Dominique and Sylvain Levy)
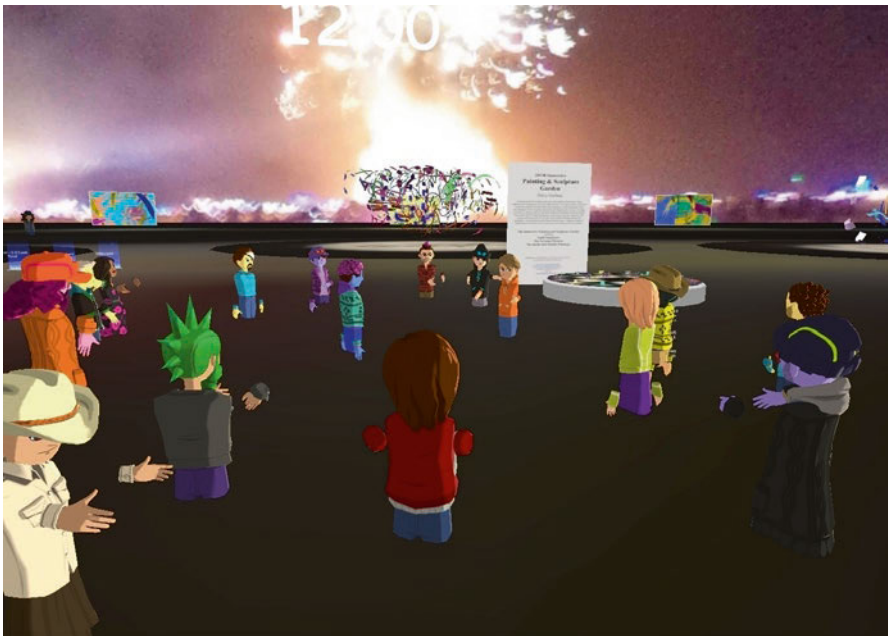
Fig. 8.5 Darcy Gerbarg. Painting and Sculpture Garden. BRCvr event on AltspaceVR, 2021

2020 was postponed because of the pandemic and held online. Whereas the opening celebration was virtual in 2020, in 2021, the fair had a physical presence and opened successfully just after Labor Day.

Post-pandemic, museum professionals are utilizing all available analytical tools, to maintain and grow their audience. According to a study ironically commissioned by the Knight Foundation pre-pandemic in 2020 to understand "digital readiness

and innovation readiness in the museum sector," several hurdles to adoption need to be recognized:

- "dedicated digital staffing is severely limited…
- digital strategies are still emergent…
- digital projects are mostly siloed, and outcomes poorly tracked…" (Knight Foundation, 2020).

Despite the intentions of senior staff and audience eagerness, the Knight survey demonstrates just how much of a challenge adopting digital may be for most museums. Furthermore, the degree to which museums successfully implement digital programming is largely related to their size and budgets. As the Knight Foundation also found in their study, smaller museums may only have one person dedicated to digital programming, whereas larger museums often have entire departments dedicated to the development and installation of new digital approaches. There are also vast differences whether a digital component is designed specific to one artwork or exhibition or whether the digital infrastructure informs the entire institution as I anticipate will be the future direction in as many museums as have the funds and staff to do so.

Although augmented reality (AR) was already in use by museums prior to the COVID pandemic, clever applications by an increasing number of institutions have insured that the technology will be a staple of future art museum resources. In 2019, for example, Apple invited the New Museum in New York to develop a joint AR initiative that would be free to the public in select Apple stores around the world. That the New Museum had already demonstrated its support of digital artist initiatives made the museum particularly attractive to Apple as a partner. The group of artists invited to participate included Nick Cave, Nathalie Djurberg and Hans Berg, Cao Fei, John Giorno, and Pipilotti Rist. When they looked through their iPhone or tablet, shoppers in select Apple stores encountered artworks by these artists that appeared to be installed in the aisles and suspended in the air around the Apple products. This program fostered a humorous dialogue between those customers who were unaware of the presence of the AR artworks and were trying to focus on the products they had come to purchase and those who came to the store specifically for the AR experience.

The Los Angeles County Museum of Art has promoted programming since the 1960s that encourages collaborations between art, science, and technology. The impetus for founding the museum's current art + technology lab was the spirit of LACMA's original art and technology program (1967–1971) founded by the museum's first curator of modern art Maurice Tuchman, who matched artists interested in participating with technology companies located in Southern California. The current lab is part of The Hyundai Project: Art + Technology at LACMA, a joint initiative exploring the convergence of art and technology. In fall 2021, the Art + Tech featured project explores AR by bringing together a group of artists and scientists to create a series of virtual monuments so that some of the histories of LA communities can be explored both by visitors who can experience the augmented reality

monuments at site-specific locations across Los Angeles including LACMA's Wilshire Boulevard campus, MacArthur Park, Earvin "Magic" Johnson Park, and Los Angeles Memorial Coliseum and visitors located anywhere. Widespread acceptance of remote participation is undeniably one of the key after-effects of the COVID pandemic.

During the COVID crisis and ensuing closures, many museums came up with similar hybrid technology solutions as a way of keeping virtual doors open even though their physical doors were shut. Another corporate-museum partnership was fostered between the Metropolitan Museum of Art in New York and Verizon to showcase its new 5G network capabilities. Through their joint efforts, an AR application was produced that let visitors walk through 30,000 sq ft. of exhibits and tour 13 newly constructed galleries composed of thousands of high-resolution scans. Guests could also bring home selections from the Met's collections of masterpieces and install them on their own walls via their smartphones. This AR program effectively engaged those conversant with technology and longing for a museum experience. Although AR is far less elitist than VR, the only shortfall is that whereas the Met's doors are open to everyone regardless of the technology they own and their proficiency with it, the AR application still limits participation to those willing and capable of making a virtual visit.

8.4 The NFT Revolution

In the art world, digital technology has not only changed museums, but it has also impacted how digital artworks are collected and sold. Since their inception, digital artworks have never fetched prices commensurate with their counterparts in traditional mediums, and auction houses and galleries have resisted selling them. Recently, the fear of collectors, galleries, auction houses, and museums about buying digital art dissipated in tandem with the growth of sales. The medium that made the difference was the strong emergence of non-fungible tokens or NFTs. Initially the art form was difficult to grasp since the concept of a non-fungible token is foreign to most people. NFTs are unique works identified by strings of Ethereum blockchain code that store additional information about the work which determines its ownership and authenticity. Thus, although the works can be copied, ownership can be traced and distinguished by this code, and the provenance critical in assigning value to a work of art can be irrefutably identified. There was something reassuring to even the most skeptical about the fact that the provenance could be so well established through the blockchain.

The NFT craze is partially attributable to the COVID lockdown. Collectors who previously went to galleries and art fairs to purchase art were homebound. NFTs were easily accessible on their computer screens and so was purchasing them. Also, the appeal of NFTs for a new generation of collectors was that the art was created and traded following a contemporary artistic and monetary system with which they were familiar. Consequently, many artists are experimenting with the new art form,

galleries are also incorporating NFTs as part of their stable to offer collectors, and museums have begun minting and collecting NFTs.

Prior to the pandemic, NFTs were a new art form and not the subject of articles in major art magazines and daily press, covered on major television networks, and the focus of auctions and symposia at major auction houses (Chayka, 2021). Often what has captured the attention of non-art-world insiders and made art world activities so attractive to them is its allure of exclusivity. Knowledgeable insiders seem to know which galleries to visit on trips to New York and other art capitals, which booths are "must-sees" at large art fairs, and significantly for collectors – which artists to buy. What catapulted the NFT into prominence was the sale in March 2021 of an NFT by a relatively unknown artist, Beeple (pseudonym for Mike Winkelmann), at Christie's for an astonishing price of $69,346,250. Beeple's work consisted of a collage of miniature versions of the digital artworks he had been making – one every day – over the course of 500 days.

Within 1 month following the Beeple sale at Christie's, Sotheby felt compelled to enter the NFT world and announced a sale of "The Fungible" Collection by anonymous digital artist Pak on April 6, 2021. In a novel format, the collection was released over a 3-day period exclusively on Nifty Gateway, a website that focuses on selling, minting, buying, and showcasing NFTs. Nifty had already sold more than $100 million of unique digital artworks since its launch in March 2020 by April 2021, when the Fungible sale took place.

8.5   Conclusion

The focus of this chapter has been the technological evolution exerted on the museum world by the pandemic. Equally profound changes have occurred with a new awareness of the extensive need for social justice issues to be addressed in our museums not only thematically but also via equitable career opportunities and societal acceptance. Coincident with the Black Lives Matter movement, an awakening has occurred about racial justice and how museums have a critical role to play in making their collections equitably accessible to all sectors of the population. Reexamination and reflection on the museum experience are not unique to a post-COVID world and our current societal upheaval. The practice of questioning reinvention and how it pertains to museums has been intrinsic to the museum environment for over 100 years.

The world eagerly anticipates a time again in a much-coveted post-COVID world, when visits to museums and other cultural institutions, social interaction with friends, professional colleagues and relatives, the freedom to work and travel without excessive regulations and fear, and attend academic education at all levels will no longer be encumbered by masks and other designated safe protocols. Throughout the cultural sector, the wheel of digitalization has started to revolve with escalating alacrity to keep pace with societal transformations. An increasingly large digital footprint is making its mark, and the coincident impact on museums is

not surprising. After all, museums and other cultural attractions are a fairly accurate reflection of their external worlds. Yet somewhat paradoxically, the COVID pandemic and the many restrictions which it has exerted on our daily lives and our inexplicable adaptation to them have made the distance afforded by remote digital interaction more welcome than before. The museum of the future desperately needs to pursue and incorporate the pervasive digital imperative punctuated and reinforced by nascent technologies to remain relevant to an increasingly disengaged and sophisticated audience that is the mainstay of their existence even if only virtually.

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www.Burningman.org

Cynthia Goodman, PhD, as museum director and curator, multimedia director and producer, educator and community art leader, has had a varied career in the arts level.

Dr. Goodman pioneered the implementation of new technologies in both corporate and museum exhibits. Former director of the IBM Gallery of Science and Art, NY, she organized the landmark *Computers and Art* exhibition. Her accompanying publication, *Digital Visions: Computers and Art*, served as a textbook in the field. Dr. Goodman has also advised corporations including IBM, Polaroid, and Time Warner and curated exhibitions for all of them. Dr. Goodman earned her undergraduate and doctoral degrees in art history from the University of Pennsylvania, and she was an appointed fellow at the Center for Advanced Visual Studies, Massachusetts Institute of Technology. She also received the prestigious Chester Dale Fellowship at the Metropolitan Museum of Art for 2 consecutive years.

A pioneer in museum automation, Dr. Goodman was a John Paul Getty Trust Fellow at the Guggenheim Museum in New York for 2 years. Dr. Goodman's numerous other appointments include serving on the Advisory Committee for Women and the Art of Multimedia, an international conference at the National Museum of Women in the Arts, Washington, D.C.; elected Member of the World Technology Network; National Nominating Committee 2000 Rockefeller Foundation Film/Video/Multimedia Fellowships; Founding Juror, The International Academy of Digital Arts and Sciences Webby Awards; National Endowment for the Arts Museum Program panelist 1993; International Critics Association board member, Art Table, beginning 1989; Channel 13 (New York City PBS station) Art Advisory Committee and the Committee for the Visual Environment, University of Pennsylvania.

As creative director of the Millennium Monument Company, Newport KY, she oversaw the development of a proposal for all the creative components of this proposed 110 ft. tall monument and 60,000 sq. ft. interactive exhibit. She also edited and wrote *The World Peace Bell and Peace Building: A K-12 Educator's Guide*, which was compliant with KY and OH curriculum standards and adopted by the Cincinnati Public Schools.

Dr. Goodman has organized and installed exhibitions for numerous other major institutions including The Metropolitan Museum of Art; the Whitney Museum of American Art; the IBM Gallery of Science and Art; the National Building Museum, Washington, D.C.; the National Underground Railroad Freedom Center, Cincinnati, OH; the Centre Georges Pompidou, Paris, France; and the Contemporary Arts Center, Cincinnati, where she served as chief curator and acting director. She was the first guest curator at the National Underground Railroad Freedom Center, where she organized their first traveling exhibition, *Unchained Memories: Readings from the Slave Narratives*, as well as jointly edited with Dr. Spencer Crew, Museum Director, the book that accompanied it. In addition, she has lectured throughout the United States at many other museums, universities, and conferences and has authored numerous books, exhibition catalogs, and magazine articles. She has also lectured internationally at venues including the Louvre, Paris, and the Artec Biennale, Nagoya, Japan, where she served on the advisory committee. She was also co-director with legendary video artist Nam June Paik of the InfoArt Pavilion at the Kwangju Biennale in Korea. In addition, she co-authored the accompanying catalog.

Her publications and exhibitions have been widely reviewed and heralded in publications including *Art in America, The New York Times, Wired, New York Magazine, The New Yorker, Newsweek, The Village Voice, Vogue,* and *The Wall Street Journal. The Art of Caring: A Look at Life Through Photography*, a nationally traveling exhibition which she organized, opened July 2010, at the New Orleans Museum of Art. The book that accompanies this exhibition was selected by Oprah Winfrey as a book of the month.

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