THE POWER OF AMERICA'S MOST WATCHED SHOW:

HOW ENTERTAINMENT TELEVISION CAN CHANGE

SOCIAL BEHAVIORS

by

KYLE HEINER

A THESIS

An Abstract of the Thesis of

Kyle Heiner for the degree of Bachelor of Science
in the Department of Journalism: Advertising to be taken June 2018

Title: The Power of America's Most Watched Show: How Entertainment Television
Can Change Social Behaviors

Approved: _____

Kim Sheehan

This thesis examines the effects entertainment television can have on audiences beyond simply making them laugh, scream, or cry. In an era where the public has become increasingly untrustworthy of traditional broadcast news and advertising, I argue that ideas that prompt social change can be communicated through entertainment television, specifically, America's most watched shows. In this thesis, I focus on how America's current highest rated show, *The Big Bang Theory* (CBS, 2007-)*,* a scientifically-accurate sitcom centered around a group of young male scientists and their new blonde neighbor, can incorporate the United Nations Sustainable Development Goals into its storyline to promote their message to a majority of Americans. By analyzing case studies about product placement, public service announcements, science communication, and media partnerships, this study suggests that integration with television storylines can increase knowledge and spur action among audiences. Importantly, I argue that episodes that contain a message central to the storyline, ease seamlessly into the narrative, and are open with their external partnership, are the most successful in getting their message across. I further provide a potential storyline *The Big Bang Theory* can take when working with the United Nations.

Acknowledgements

I would like to thank Professor Kim Sheehan for her expert guidance through this project, from helping establish the topic, to the parameters for how it should be studied, to the endless revisions and constant reassurance that it could be completed. Her expertise in the fields of advertising, marketing, media theory and communications studies and dedication to mentoring students have made this thesis possible.

I would also like to thank the other two members of my Defense committee, Dr. Erin Hanna and Professor Helen Southworth. From Dr. Hanna's insights on television studies to Professor Southworth's guidance through the Prospectus portion of this project, their continued support has helped me see this entire project through.

I also must express gratitude to all of my friends and family who provided me insights, links to articles, and general support through the process. Thank you!

Table of Contents

List of Figures

Introduction

In 2018, the ability to communicate with one another has never been more readily available. While this is beneficial for connecting people to information and cultures that are otherwise inaccessible, it is also adversely difficult for those looking to have mass messages heard amongst the crowd. Media channels exist from television to film to cell phones to the internet, and advertisers have had to revolutionize their traditional means of connecting to their intended audiences. While there has been a significant increase in the number of vehicles available for advertisers to use, broadcast television still remains a paramount institution for distributing information to the American public. Broadcast television is known for its three purposes: news, advertising, and entertainment. More recently, however, news and advertising have become scrutinized, and as such, left entertainment as one of the final frontiers for building relationships with audiences.

The distrust of media has seen a sharp increase in the mid-2010's onward, thanks both to burgeoning media channels and divisive politics. In 2016, Donald J. Trump was elected president after a media-crazy election trail. His popular retort "Fake news!" was thrown at outlets like CNN, NBC, and ABC, and since then has had a defining effect on the rhetoric Americans now have. The phenomenon of the term "fake news" is seen in various circles, be it Republicans who have embraced the motto to combat nearly any story, to Democrats who point to articles circulating around the alt-right, to simply being used as the punchline for jokes in everyday conversation. In recent headlines, the social media powerhouse Facebook was found to be influenced by Russian propagandists, spreading slightly-doctored videos and news stories that altered

the truth (Sheera and Benner, 2018). On both sides of the political spectrum, information gleaned from the internet is received with a certain amount of skepticism.

The evening broadcast news, once an American standard for educating citizens on the news of the day, has fallen in trust to approximately 47% (Friedman, 2018). Another study from Gallup found that only 41% of Americans have a great deal/fair amount of trust for mass media to report news fully, accurately, and fairly (*Gallup*, 2017). Social media has upended the way consumers get their news, be it from longstanding organizations like the *New York Times* or from politically-seeped websites like *Breitbart.* No matter where the information is coming from, funding for the outlets and journalists who do the work is imperative to its success. This funding is primarily done through advertising, such as buying ad space on a website or playing 30-second spots during the structured commercial slots of a program. The measured effectiveness of each ad is done through outside organizations such as Nielsen, Millward Brown, etc., however, the rate between new purchases and viewer impressions is not equal. Audiences are becoming increasingly tired of ads, with the average American seeing up to approximately 10,000 branded messages per day (Saxon, 2017). As such, Americans have a hard time remembering any messages in the process, let alone acting upon them when making their purchase decision.

Advertisements are not the only form of mass messaging getting lost in the crowd, however, as non-profit organizations and governmental programs are similarly facing communication difficulties. One agency that has encountered this problem recently is the United Nations, who in 2015 unveiled their seventeen Sustainable Development Goals (SDGs) that 193 countries agreed upon to work towards by the year

2030 (Kwatra and Boelt, 2015). Anecdotally, I was not aware of these goals until I

visited the United Nations in New York for educational purposes and was informed by

the communications team what they were and how they planned to communicate them

to the American public. When I asked if they were using entertainment television, a

highly viewed communication channel, the spokesperson mentioned they were

potentially in the process of working with CBS and the stars of its most popular shows,

such as Lucy Liu from *Elementary* and Jim Parsons from *The Big Bang Theory.* The

United Nations' proposed plan was to have those actors speak during the commercial

breaks of their respective shows about the purpose and mission of the 17 SDGs

program. I immediately had concerns for two reasons. The first being, Americans are

consistently finding new ways to watch entertainment media, such as streaming

services, digital video recording services, or even illegal torrenting sites -- all of which

have the potential to reduce ads or make them obsolete completely. The second issue is

that, based on audience research, some Americans prefer the character over the actor,

and would much rather see Sheldon Cooper speaking than Jim Parsons, the openly gay,

politically-liberal actor from California. That led me to this question: to circumvent this

problem, could organizations incorporate their messaging into the actual content of the

show itself, and would that be more influential than traditionally airing it during the

commercials?

Companies have already recognized the profitability of incorporating their

goods into entertainment media through product placement, but organizations looking

to inform the public about their mission have yet to do the same. Broadcast television

operations are overseen by the Federal Communications Commission, which is a

governmental media monitoring agency that ensures broadcasters operate in the public good. Traditionally, that mode of public service has been accomplished through daily news and public service announcement (PSA) programs such as NBC's "The More You Know." However, as Americans find new ways to consume media beyond time-oriented viewing and watch the news and advertising with a sense of uncertainty, perhaps the final frontier of broadcast television to best impact Americans is entertainment programming.

This thesis will examine how America's most watched show, based on Nielsen ratings, can incorporate ideas and messages into its storyline that more profoundly change people's belief systems and actions. Specifically, this thesis will examine CBS' *The Big Bang Theory,* a 30-minute situational comedy centered around a group of four male scientists and their attractive new female neighbor who moves in next door. Using case studies about product placement, public service announcements, and climate change communication, this thesis will argue that since broadcast television must operate in the public good, programs such as the United Nations should look towards entertainment television itself as the vehicle for impacting their message, as its effects on viewers bode stronger for changing social behaviors. The points made will showcase why this will work and how to actually implement it in three important ways, using the United Nations and *The Big Bang Theory* as a speculative case study.

Climate Change Behaviors

In America's current cultural, political, and economic landscapes, climate change has become top of mind for a majority of Americans, whether they believe in it or not. The topic has proven to be divisive for a few reasons, such as whether it's real, human-caused, or as urgent as the media makes it out be. In the past few decades, the public salience of climate change has grown dramatically, as far as becoming one of the major political issues in the 2016 Presidential election. Due to its heightened attention and political connotation, the scientific phenomenon has been become an argument amongst scientists, public officials, and citizens alike. Compared to other scientific studies and occurrences, climate change is not accepted by a large number of Americans, and as such, scientists are having a troubling time communicating its effects and the ways to combat it. Climate change communication, education, and prevention currently face formidable barriers, though its effects have been felt for more than a century and will continue to be for years to come.

The public awareness and scientific acknowledgment of the Earth's altering climate is a global issue. Early mentions of the phenomenon date back as far as 1896, when Svante Arrhenius, a Nobel-Prize winning Swedish scientist, published his first calculations of global warming from human emissions of CO2 (Weart, 2008). In the 1930s, Guy Stewart Callendar presented evidence that correlated rising carbon dioxide concentrations through the greenhouse effect, heightened from humanity's use of fossil fuels, with global warming. While his work today is remarkably accurate (Hawkins and Jones, 2013) at the time it was rejected by key experts in the field, prompting him to write that "the idea that man's actions could influence so vast a complex is very

repugnant to some," (Weart, 2008). This mindset has continued today among leaders and civilians alike, though many fail to understand the far-reaching effects of it.

Climate change encompasses a large variety of issues plaguing the Earth, from the rising of temperatures, weather patterns, sea levels, air quality, and food security. The Intergovernmental Panel on Climate Change noted that,

From 1880 to 2012, average global temperature increased by 0.85°C. To put this into perspective, for each 1 degree of temperature increase, grain yields decline by about 5 per cent. Maize, wheat and other major crops have experienced significant yield reductions at the global level of 40 megatons per year between 1981 and 2002 due to a warmer climate. Oceans have warmed, the amounts of snow and ice have diminished and sea level has risen. From 1901 to 2010, the global average sea level rose by 19 cm as oceans expanded due to warming and ice melted. The Arctic's sea ice extent has shrunk in every successive decade since 1979, with 1.07 million km² of ice loss every decade (*UNDP*, 2016).

These are just two of the myriad of figures released by reputable scientific organizations and studies, with new information being discovered daily. While many of the effects of climate change alerted by scientists are too subtle to be felt by the average American, extreme weather has been one outcome truly felt all across America, from the Dust Bowl in the 1930s, The Great Blizzard of 1978 in the Ohio Valley, Hurricane Katrina in 2005, to the recent drought and forest fires in California. While scientists are closing in on the claim that human emissions have doubled the risk of extreme weather events (Stott et al. 2004), one of the largest barriers between scientific communication and public acceptance is the rhetoric used.

The phrasing and tactics used to discuss climate change remain the most ubiquitous way Americans understand the phenomenon. For example, the term "global warming" has had a divisive past due to its connotation with continuously rising temperatures. Global warming refers to "the increase in Earth's average surface

temperature due to rising levels of greenhouse gases" while climate change more largely encompasses the "long-term change in the Earth's climate, or of a region on Earth," (*NASA*). Skeptics of global warming pointed to colder winters, larger snowstorms, and freak weather during summer months as proof that scientists were incorrect with their claims. Thus, many major media outlets and organizations have changed their verbiage around the issue to include the more encompassing term, climate change, unless specifically referring to the increase in surface temperatures. Still, longstanding preconceptions about the issue can be hard to reverse once someone's mind has been made.

The other largest detractor of failed climate change acceptance is the phenomenon's highly politicized nature. Because climate change is so hard to tangibly realize, it makes the phenomenon easy to discredit and do nothing about. Anthony Giddens, a British sociologist, refers to this phenomenon as Giddens' Paradox, stating "since dangers posed by global warming aren't tangible, immediate or visible in the course of day-to-day life, however awesome they appear, many will sit on their hands and do nothing of concrete nature about them," (Giddens, 2009). This rhetoric was especially pervasive for Americans in 1981, when Ronald Reagan took the presidency and openly denounced climate scientist's concerns and led his conservative party to deny environmental worries as simply liberal ranting. Representative Albert Gore, Jr. became the rallying point for scientists, when he aligned himself to the climate change movement, going as far in 1987 to introduce the ozone problem into presidential politics during a televised Democratic debate (Weart, 2008). Gore would later release the film, *An Inconvenient Truth* (2006), which became the third highest box-office opening of

any documentary in history (Weart, 2008). While it persuaded many about the horrors of climate change, it further drew the line in the political sand, as Gore at that point had served as a Democratic Vice President in 1996 and Democratic Presidential Candidate in 2000. The issues have continued politically even to today, when far as President Donald Trump withdrawing from the historic 2015 Paris Agreement on climate change mitigation. The ever-growing political connotation of climate change has created barriers in communicating its effects and factuality.

The climate change communication done so far has created a rift between American citizens and scientists themselves. Multiple studies have found that 97% of scientists are in consensus that humans are causing climate change (Cook et al. 2016). Yet, a recent study completed in 2017 by the Yale Program on Climate Change Communication found that only 58% of Americans believe climate change is human caused (Leiserowitz et al. 2016). The dramatic difference in numbers may come from the way Americans are receiving this information, be in nightly news, scientific journals, or social media. These channels all highlight different areas of the issue, be it what to expect, how to plan for it, and what citizens can do to change it. While activities such as recycling, reducing water consumption, taking a bike to work, etc. have been communicated to American citizens, the issue is still failing to stick in certain demographics. Standard avenues have been failing to both educate Americans about the issue pervasively and in turn inspire them to do something about it. With the myriad of channels reporting on it, no standard message is coming clear for citizens and without a comprehensive, globally-agreed upon but locally-implemented plan, climate change communication may continue to struggle for years to come.

United Nations 17 Global Goals

One organization fighting for climate change policy is the United Nations, an intergovernmental league tasked to create and maintain order in the world. The United Nations was established in 1945 both after the League of Nations disbanded and as a response to World War II, hoping to serve as a prevention for another conflict of that kind. Now consisting of 193 member states, the United Nations is the largest international organization, with offices in Geneva, Nairobi, Vienna and their headquarters in New York City.

To combat the threats posed by many diverse factors, such as climate change, poverty, and equality, the United Nations has consistently created plans that address and mitigate these problems. In a historic summit on September 23, 2015, the United Nations proposed a set of 17 Sustainable Development Goals (SDGs), officially announced as "Transforming our World: the 2030 Agenda for Sustainable Development," to replace the previous Millennium Development Goals (MDGs), which ended in 2015. The largest difference between the two sets of goals was that while the MDGs distinguished between "developed" and "developing" nations, the SDGs applied to all countries universally. The SDGs similarly received support from many major non-governmental organizations, unlike the MDGs which were criticized for their silo-like approach to solving the problems. While the MDGs focused on specifying their goals to distinct areas, an approach which does help facilitate clarity in communication, countries were tasked to create specific agencies to approach each goal with little to no interplay between them (Rusch, 2017). These goals, unlike the SDGS, did little to focus on collaborations and had no thematic categories to organize them under.

The 17 SDGs, which were rebranded in 2017 as the Global Goals for Sustainable Development, include 169 targets and cover an extensive range of issues that the world today demands. Instead of solving the symptoms, the United Nations' goal for this initiative was to address the root causes of the problems. Ranging from climate change, water, sanitation, health, poverty, energy, hunger, sustainable consumption and gender equality, each goal includes a rationale behind it with a proposed target to reach by 2030. In 2016, the process for achieving these goals began in each country, through a process known as "Localizing the SDGs." Each nation was required to draft legislation, develop a plan of action, estimate budgets, and search for partners. Under the Obama Administration, the United States pledged to mobilize more $100 billion in funding to fight poverty, specifically health, food security, and energy (The White House, 2015).

The United Nations understands that in order to achieve these goals they need the support of the public, and to do that, the public both needs to know of the goals and how they can help achieve them in their individual lives. Before the rollout of the SDGs in September, a summit of high profile individuals in the advertising industry were called together to brainstorm what was being billed as "The World's Largest Advertising Campaign," (Monllos, 2015). When the goals were agreed upon, an ambitious UN campaign was developed from that meeting intended to reach seven billion people in seven days (Gian, 2015). The campaign debuted on September 25, 2015, one day after the signing, beginning with a one-minute video spot titled "We Have A Plan," which features a collection of animated animals as UN delegates and Liam Neeson as the voice of God, debuting in movie theaters worldwide. The initial

week-long push partnered with media channels such as Google, Getty Images, Skype, Wikipedia, MSN as well as influential stars from sports, film, music and television. Before October 2nd, the campaign featured other elements such as a crowd-sourced film, "We the People," that was promoted on Google's homepage, an online film featuring Stephen Hawking, and events and rallies in more than 100 countries.

The goals come with additional backing from the United Nations Development Group (UNDG), a consortium of UN agencies founded in 1997 as a means to increase the support for UN development on the national level. To support the initiative, the UNDG created "Project Everyone," which "seeks to put the power of great communications behind the Sustainable Development Goals." Their mission is "to ensure that everyone on the planet knows what the Global Goals are, so that they stand the greatest chance of being achieved," (*Project Everyone*). This included developing icons for each of the goals, shortening the name of the initiative to "Global Goals," and designing a circular logo that could be used for pins, stickers, shirts, etc. Their most recent efforts have included the #FreedomforGirls campaign on International Girl's Day 2017 which tackled Goal 5: Gender Equality and the Healthy Not Hungry partnership with UNICEF in 2017 which combined Goal 2: Zero Hunger and Goal 3: Good Health and Well-Being. The figure below shows the Global Goals branding in its entirety, including the circular logo and colorful symbols that reference reaching objective:

Figure 1: "17 Sustainable Development Goals"

For the focus of this thesis, I will be targeting Goal 13: Climate Action and how its messaging can be heard more effectively, while simultaneously increasing salience for the Global Goals overall. The overarching messages of Goal 13: Climate Action come from the United Nations Framework Convention on Climate Change, which the UN denotes as the primary international, intergovernmental forum for negotiating the global response to climate change (*UNDP*, 2016). The five targets associated with Goal 13 are: Target 13.1: Strengthen resilience and adaptive capacity to climate related disasters, Target 13.2: Integrate climate change measures into policies and planning, Target 13.3: Build knowledge and capacity to meet climate change, Target 13.A: Implement the UN framework convention on climate change and Target 13.B: Promote mechanisms to raise capacity for planning and management. A list of actions the UN proposes on their website for citizens to partake in to help mitigate the effects of climate change include "find a Goal 13 charity to support, recycle, compost, choose reusable products, buy eco-friendly products, bike, walk, or take public transport, consume less meat, reduce use of paper, and offset carbon emissions," (*United Nations*). In this next section, I will analyze the proposed media channel to best inform American audiences of Goal 13 and the activities they can implement into their routines to help achieve it.

Television: From Past to Present

Since its inception, television has revolutionized the dissemination of information. Specifically, television has infiltrated the home and family dynamic more so than any other media outlet, surpassing radio and integrating itself with the internet. Before 1950, the amount of television sets in U.S. homes could be measured in the thousands, but by the late 1990s, 98% of U.S. homes had at least one television set, and of which, were on for an average of more than seven hours a day (Stephens, 2000). This rapid expansion had to do with the accessibility of the product, the move to color television, and the generation of more watchable content — specifically entertainment programming.

In 2017, the state of entertainment television production can be categorized as the "Golden Age of Television" (similarly referred to as the "New," "Second," or "Third Golden Age of Television"). Beginning roughly around the 2000s, the era is marked by the swell of United States produced television programs that have become nationally, internationally, and critically acclaimed. These famously include The Sopranos (HBO, 1999-2007), Mad Men (AMC, 2007-2015), Breaking Bad (AMC, 2008-2013) and Game of Thrones (HBO, 2011-). For the purposes of this study, I will refer to this era as the "New Golden Age of Television."

The name pulls directly from the original "Golden Age of Television," ranging roughly from the late 1940s to the early 1960s, where there was a huge generation of original and classic dramas tailored for live primetime television (Everett). In the formative years these shows included The Actors' Studio (ABC/CBS, 1948-1950) and Mr. Black (ABC, 1949), followed by Kraft Television Theater (ABC, 1953-55) and

Four Star Playhouse (1952-56), and lastly capped with dramatic anthologies such as Alfred Hitchcock Presents (CBS/NBC, 1955-65) and Twilight Zone (CBS, 1959-64). The two golden eras can be distinguished most clearly by the times of day they were distributed and the outlets that distributed them.

The "New Golden Age of Television" is reaching new saturation levels in the 2010s onwards as the amount of scripted content reaches unprecedented levels. Described as "Peak TV," this is the distinction of how many scripted programs are available via broadcast, cable, and streaming services. In 2010, there were 216 scripted series. In 2016, the number more than doubled to 454. In 2017, that number climbed even higher to 487 (Otterson, 2018). With the ever-expanding onslaught of television, and new distributors looking to enter the market (such as Apple and Facebook), the space for shows to stand out and attract wide audiences is much more competitive, as can be seen in the figure below, which details the amount of scripted original series on television since the 2008 season.
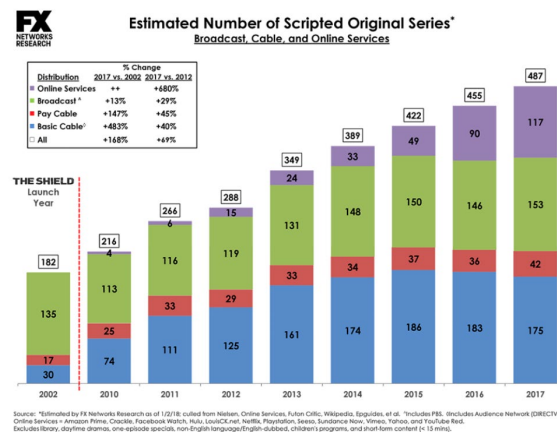
Figure 2: "FX Estimated Number of Scripted Original Series"

Three distribution channels have emerged in the television field: broadcast, cable, and streaming. Broadcast networks are the original distributors of entertainment television and are governed by the Federal Communications Commission (FCC). These

networks are: ABC, CBS, NBC, FOX, and the CW. Cable networks can be separated into two categories: basic cable and pay cable. Basic cable is not under the jurisdiction of the FCC, although they may have sponsors who represent the establishment, and are part of the basic cable package. These networks include: ESPN, MTV, Comedy Central, etc. Paid cable networks are free of commercials and subscription based channels that tend to feature more profanity, nudity, and obscenities. These networks include HBO, Showtime, Starz, etc. Streaming networks are similarly subscription based and free of FCC regulation, and the content exists at any time to the subscriber. These streaming services are a mix of original content and acquired content, and they include Netflix, Hulu, and Amazon Prime. For the purpose of this thesis, we will be focusing on broadcast television, the most watched of the distribution channels present.

American Broadcast Television

The American family has long valued the act of coming together, be it at the dinner table, camp fire, or television set. Television has radicalized how Americans spend their evening, receive their news, and pass the time. Publically broadcast television has had the role of communicating entertainment, news, and advertising to the majority of Americans. Through the years networks have grown, split, and revolutionized media consumption, and even today, these networks must utilize other channels such as the internet and smartphones to keep up with changing times. Even with the onslaught of television in the late 2010s, broadcast television remains the most watched distribution channel by Americans.

The creation of television developed alongside the invention of radio, which brought in a new form of common electronic media that put the print monopoly of mass media to an end. In the late 1890s and early 1900s, inventors and entrepreneurs worked tirelessly to develop a system of communication that could be transmitted across airwaves. Aubrey Fessenden, a Canadian-born electrical engineer became the first person to transmit voice and music through the continuous wave of radio in 1902. Four years later, on Christmas Eve 1906, Fessenden broadcasted music and speech from his station in Massachusetts, with the signal being picked up as far away as the West Indies. The historic broadcast was enough to inspire investors and inventors to further the development of radio, and as amateur radio operators began to grow from 322 in 1913 to 13,851 in 1917, opportunistic American entrepreneurs began to form large corporations based around the medium (Scott, 2008). These stations would not only become some of the largest long-standing media corporations in America today, but would delve quickly into the world of television, film, and later, the internet.

The creation of media corporations was fueled by competition and a rapidly growing market. The Radio Corporation of America (RCA), initially a wholly-owned subsidiary of General Electrics, was the first corporation to establish itself in the market in 1919. Within a few years, RCA diversified its portfolio to include both broadcast communications and the equipment needed to receive said broadcasting, such as radios, vacuum tubes, and soon, televisions. In 1926, RCA formed the National Broadcasting Company (NBC) to take control of its network broadcasting business. A year later, the company that would become the Columbia Broadcasting System (CBS), established itself as NBC's main competitor. In 1934, the Mutual Broadcasting System was formed,

but unlike its competitors, it would never expand into television. That same year, the

U.S. Government replaced its Federal Radio Commission (FRC), a body designed to

regulate national radio use, with a larger agency that would cover all forms of American

broadcast media until present day: the Federal Communications Commission (FCC).

The ability for all Americans, regardless of sex, race, religion, etc., to receive

rapid communication services became imperative for the United States Government.

The Communications Act of 1934 was signed into law by President Franklin D.

Roosevelt, who urged that all communication services be operated under a single

agency. Sec. 1 [47 U.S.C. § 151] reads:

> For the purpose of regulating interstate and foreign commerce in
> communication by wire and radio so as to make available, so far as
> possible, to all the people of the United States, without discrimination on
> the basis of race, color, religion, national origin, or sex, a rapid, efficient,
> Nation- wide, and world-wide wire and radio communication service with
> adequate facilities at reasonable charges, for the purpose of the national
> defense, for the purpose of promoting safety of life and property through
> the use of wire and radio communication, and for the purpose of securing
> a more effective execution of this policy by centralizing authority
> heretofore granted by law to several agencies and by granting additional
> authority with respect to interstate and foreign commerce in wire and radio
> communication, there is hereby created a commission to be known as the
> "Federal Communications Commission," which shall be constituted as
> hereinafter provided, and which shall execute and enforce the provisions
> of this Act (United States, 1934).

The single agency that the President urged for would become the Federal

Communications Commission under statute (47 U.S.C. § 151 and 47 U.S.C. § 154) and

would become the U.S. Government's primary media control agency. Under this

assignment an important agreement was made: "in return for free and exclusive channel

assignments on the public's electromagnetic spectrum, broadcasters are required to

serve 'the public interest, convenience, and necessity,'" (LaMay, 2001). The creation of

the FCC shaped the way broadcast television was formatted and distributed right as the medium began to take form.

During its infancy, television captured the attention of audiences far beyond the marvel of radio. The first regular televised American broadcasts began in 1939, when RCA's W2XBS station serviced approximately 4,000 locally-owned sets, famously showing Roosevelt's opening of the New York World's Fair that year. It later broadcasted the first Major League Baseball (MLB) and National Football League (NFL) games. Immediately public event and sports programming were entrenched in the roots of American broadcast television, and as the Dumont Company, RCA, and GE began producing electronic television sets that were available for the less affluent, these programs became available for the masses. In 1941, the FCC authorized commercial television, setting standards, approving stations, and indirectly forcing NBC to sell its blue network, which would become the American Broadcasting Company (ABC).

During this year, there were approximately 7,000 television sets in the United States, and before the number could grow exponentially, the bombing of Pearl Harbor halted television production and broadcasting dramatically. It wasn't until 1950 when radio operators experienced a mass exodus of their audience, with approximately 9,735,000 television sets now owned in America, which equated to roughly 9% of U.S. households (Tarlton, 2012). It was clear the transition from radio to television was being established, and with it came the new forms of content that would grace screens nationwide.

The 1950s were the original "Golden Age" of television, with radio entertainment now being reproduced on television in an audio-visual format (*The Lone*

Ranger [ABC, 1949-1957]), as well as the creation of original variety shows (*Your Show of Shows* [NBC, 1950-1954])*,* situation comedies (*I Love Lucy* [CBS, 1951-1957]), game shows (*The $64,000 Question* [CBS, 1955-1958]), and children's programming (*Captain Kangaroo* [CBS, 1955-1984]). Later color televisions began to replace the old black and white sets of the past, which ushered in a new era of police procedurals (*Police Story* [NBC, 1973-1978]) and fantasy/sci-fi shows (*Star Trek* [NBC, 1966-1969]). Networks also tested made-for-television movies and limited-run series in attempts to diversify their portfolio of entertainment offerings in order to attract the attention of an ever-growing audience. It was clear different generations and social classes preferred varying media, as can be seen by the rise of cable networks and the introduction of the new television network, Fox Broadcast Network (FOX), in 1986, which quickly lured young audiences via programs such as *The Simpsons* (FOX, 1989-)*.*

As certain shows and networks began to attract larger audience then their competitors, the financial support from advertisers became imperative for networks to get revenue. In order to receive this funding, advertisers needed to understand which series were popular among Americans. The next section will discuss in depth the Nielsen ratings system, an agreed upon system that television executives uses, as well as the role that advertising plays from both a commercial standpoint (product placement) and as a public good (public service announcements), before briefly mentioning a media report that examines the content and diversity of the shows themselves and how it's important in connecting consumers to messages.

Literature Review

Nielsen Ratings

Ratings are the backbone of commercial television, as they capture a part of the large-scale enterprise that is "audience measurement" and report to advertisers and network executives alike what shows are popular, which demographics are watching them, and what it means for future trends. Ratings are developed through a two-fold process, detailed below:

Ratings are collections of statistics, numerical summaries of the outcome of the rule-governed calculations involved in measuring the audience. In the American situation, two features of the audience are the main objects of measurement: its size and its comparison. Size refers to the number of people tuned into a certain program or channel at a certain hour on a certain evening; composition refers to the sorts of people who are watching, defined in terms of demographic variable such as age, location, income, and sex. Measurements are taken in relation both to the total potential audience and to the actual audience at the moment of measurement (Ang, 1991).

The results of these studies are commonly reported as "ratings points/share," which is the combination of ratings, or the estimated percentage of all "television households" within a certain area viewing a specific program or station, while shares express the "percentage of all households having the TV set on and tuned to a certain program or channel at a particular time," (Ang, 1991). A show may be reported to have a 3.7/9 during its broadcast, which translates to 3.7% of total homes with a TV set were turned into that program, while the number of households watching TV in general at that time was 9% (*The Futon Critic,* 2010). The process of developing ratings, shares, and expressed averages is primarily done by the industry leader for this category: Nielsen Media Research.

The history of Nielsen ratings dates back to 1950, when A.C. Nielsen developed a system to sample television viewing that would radicalize the industry in the process. A.C. Nielsen, now solely known as Nielsen, is a global media marketing research firm and data analytics company whose goal is to "continually develop new ways to answer the most important questions facing the media, advertising, retail and fast-moving consumer goods industries," (*Nielsen*). For the television industry, Nielsen ratings have been in place since the 1950-51 season, utilizing two techniques to collect audience numbers. Nielsen designates certain months as "sweep" months (typically November, February, May and July), and identifies household demographics in certain cities across the United States to fill out a "diary" of the programs watched in their home for a one-week period. The second method is the 'People Meter,' which is an electronic meter attached to television sets of sample households, which reports the times the television set is on or off and to which channel it is tuned to. This data can be transferred overnight to networks such as ABC, NBC, and CBS to be discussed in boardrooms as early as the next morning. While this process in recent years has been updated to account for time shifted viewing (such as DVRs) and its A2/M2 Three Screen report, which analyzes in and out home viewing behavior, claims about Nielsen ratings being outdated has had little effect yet on the television industry. Ratings have reigned paramount in determining which shows get renewed and others get cancelled.

In some cases, the rush for ratings has meant sacrificing quality television and/or diverse representation in order to stick to the status quo of what the majority of Americans prefer. Critics such as Harold Mehling, in his book *The Great Time-Killer,* argues that ratings rule in an authoritarian manner over the industry, with executives

solely focused on winning the ratings race (Mehling, 1962). Each week Nielsen releases its Top Ten list, which organizes the most popular shows in categories such as "Prime Broadcast Network TV – United States," "Cable Network TV – United States," and "Syndication Network TV – United States," as well as breaking down the shows into demographics such as the millennial audience, Hispanic audience, and African-American audience. Networks consistently look to top these lists not just on a weekly basis, but have the most watched show of that season and be the most viewed network of the year. To do this, networks typically develop programming that is palatable to a majority of American audiences, such as *Sunday Night Football* (NBC, 2006-) or *American Idol* (FOX, 2002-2016)*, which in doing so, opens avenues for advertising to embed itself into the programming itself.

Product Placement

Advertising has long been interwoven into the foundation of broadcast television. Shows like *Texaco Star Theater* (NBC, 1948-1956) were sponsored by companies and included their names into the titles of their programs. The term soap opera is derived from programs that were funded and produced by soap companies such as Procter & Gamble. Infomercials, a form of paid-programming designed to sell a certain product, began popping up more frequently, while short 15 second, 30 second, and 60 second spots started to interrupt entertainment programming. The first legal advertisement approved by the FCC ever ran occurred on July 1, 1941 during a Dodger-Phillies baseball game on NBC. Ran by Bulova watches, the 10 second ad cost just $4 and was seen only by a few thousand people in the New York market where it aired

(Poggi, 2016). While miniscule in terms of its price, length, and reach, the advertisement changed the way broadcast television would be formatted forever. Quickly advertisers discovered that commercials on television worked best when they were pre-recorded, repeatable, and entertaining. Thanks to Nielsen ratings, advertisers were able to understand the unique audiences watching certain shows, and as such, begin targeting them with ads tailored to their lifestyles. The highly coveted crowd, the 18-49 demographic, which holds the most purchasing power, became the impetus for television shows to start producing series relevant to those audience member's lives. While television programs are typically funded by their broadcaster, the network earns back their money and more by selling advertising space around that content. Thus, the relationship between advertising and broadcast television has always been close, but as new ways to watch content emerges, the relationship has innovated.

In the past few decades, the distribution channels available for audiences to consume to television has changed, and with it, the advertising industry. Paid-cable networks like HBO and Showtime run ads only highlighting their other content. Streaming services like Netflix and Amazon, as well as Hulu for an extra fee, allow users to watch their content uninterrupted from traditional commercial advertising. Digital Video Recorders (DVRs) such as TiVo gave audiences the ability to record programs to be watched at a later time, including the function of fast-forwarding past advertisements. Illegal streaming and sites that allow internet users to torrent unauthorized episodes and programs only feature the content itself and not the advertisements that would typically be attached to the program. In an attempt to combat the growing avenues that audiences could take to evade commercial advertising,

advertisers began to use a tool known as product placement to integrate their brand into the shows themselves. Defined as the "insertion of branded products or services into mass media content with the intent of influencing consumer attitude or behavior," (Newell et al. 2006) product placement has become one of the most lucrative methods marketers can take in communicating their product to a mass audience.

The act of simply placing a product into a program is not as beneficial as it may seem. While advertisers of yesteryear had more control over the way their products would be highlighted on television, "today's product placement agents and entertainment marketing directors must collaborate with television and movie writers and producers to get their brands a starring role in their shows," (Russell, 2002). These products must not only stand out in the scene they're in but remain authentic to the storyline at hand. Famous success stories include Reese's Pieces in *E.T. the Extra-Terrestrial* (Spielberg, 1982), resulting in a 65% rise in profits, BMW's Mini Coopers in *The Italian Job* (F. Gary Gray, 2003), and Ray-Ban's Wayfarer sunglasses in *Risky Business* (Paul Brickman, 1983), which resulted in 360,000 pairs sold that year (*CNBC,* 2014). In many of these cases, these products have become synonymous to the films at hand, which is intentional and done in in part through tightly integrated cross-promotional campaigns. One of the most successful examples of this is the BMW Z3 tie in in the James Bond film *GoldenEye* (Martin Campbell, 1995), which laid out an effective campaign from both the client and film side, paying off when the company received 9,000 orders for the car just a month after the film opened (*CNBC,* 2014).

While some films and television shows specifically work with a company to insert their brand, usually for a fee depending on the audience, others utilize the brand

for a narrative device without a formal business deal from the company. In the breakout

Netflix hit *Stranger Things* (Netflix, 2016-), the supernatural character Eleven has such

an extreme hankering for Eggo waffles she steals them from a supermarket in one of the

first season's most iconic scenes. Eggo waffles immediately became associated with the

show, with thousands of fans dressing up as the character for Halloween that year with a

box of the company's waffle in hand. Trinh Le, the marketing director of the Kellogg

Co. brand claims the brand "absolutely did not know" about the product placement, and

that "Netflix doesn't offer any paid placements," in reference to a potential partnership

(Wohl, 2017). In such cases, audiences have an increasingly harder time discerning

what's paid to be there, and what's included for narrative purposes.

Public Service Announcements

While product placement typically serves a capitalistic endeavor, another form

of narrative content can be used to positively inform and persuade American audiences,

existing either around or in popular programing. In the case of television, public service

announcements aren't meant to sell a product but instead raise the salience of issues

while simultaneously explaining the ways to solve them. According to the FCC, a

public service announcement (PSA) is a message "for which no charge is made and

which promotes programs, activities, or services of federal, state, or local governments

or the programs, activities or services of nonprofit organizations or any other

announcements regarded as serving community interests," (Dessart). PSAs are designed

to raise awareness and change public attitudes and behaviors towards a specific social

issue, such as gambling or obesity. The actual process of determining what counts as a

PSA has sparked controversy among network executives and FCC officials, primarily because they are often used as a tool by broadcasters to fulfill their obligation of serving as a "public trustee" (LaMay, 2001).

One of the first televised PSAs, Smokey Bear, was created by the Ad Council, an American nonprofit organization founded in 1942, whose mission is to produce, promote, and distribute various public service announcements for a variety of organizations, including nonprofit and governmental. Smokey Bear was designed on behalf of the United States Forest Service and the National Association of State Foresters to educate the public on the dangers of wildfires (*The Ad Council*). Since then, PSAs have been embedded into network television in a variety of ways. NBC created "The More You Know" in 1989 that has continued until today*,* which is a series of PSAs broadcast specifically on that channel during the network's regular programming during primetime, late night, and Saturday Morning. CBS followed in the same vein, creating a campaign called "CBS Cares," with PSAs that have addressed mental health issues, relief efforts, and heritage months. During the month of October, CBS Cares emphasizes its continued annual effort to raise awareness for Breast Cancer, featuring actresses from its shows speaking about the issue. In 2008, Kaley Cuoco of *The Big Bang Theory* recorded a 10-second ad to be played directly before her show, encouraging viewers to "learn the facts" and understand "the importance of mammograms and early detection," (*CBS Cares,* 2008). These sponsored ads during commercial breaks have been losing significance, however, as new audiences watch media outside of the conventional evening programming.

Noticing the trend of viewers to either miss PSAs when they air or not connect with the subject matter, some shows began integrating them into the plot itself. One public service announcement that targeted a younger audience occurred in the popular dramedy *Glee* (FOX, 2009-2015). In the midseason finale S03EP14 "On My Way," popular cheerleader Quinn Fabray is driving to a wedding of her classmates Rachel and Finn, a moment fans have been waiting for eagerly for three seasons now, especially as it would happily reunite friends Quinn and Rachel. While driving, Quinn keeps receiving frantic texts from Rachel asking, "Where are you?" As Quinn texts back, "On my way," her eyes lower to the phone and within seconds her car is hit by another truck. The footage from this episode was used by the U.S. Department of Transportation and the Ad Council in their campaign "Stop the Texts. Stop the Wrecks." which aims to raise awareness to the danger of texting and driving (Snead, 2012). *Glee* executive producer and co-creator Ryan Murphy commented "this was a story we wanted to tell because we know the influence our show can have in starting conversations and raising awareness," (Ross, 2012). Fans immediately responded online, in utter shock about what happened to their favorite character, with some audience members exclaiming they would never look at their phone while driving again (@imTerrah, 2012). This was an important moment in television, as it blended elements of PSAs into a compelling storyline that in turned sparked social change, by connecting the issue to a character people cared about.

GLAAD Media Report

　　While it is imperative to understand who is watching what series from a financial standpoint, as Nielsen does, it is just as pertinent to know what demographics are represented through the program from a cultural perspective, as it can help give insights into how audiences are connecting with programs on screen. GLAAD (formerly the Gay & Lesbian Alliance Against Defamation) is a non-governmental media monitoring agency originally founded by LGTBQ+ people in the media. First created as a way to shape how the AIDS epidemic was being discussed in the news circuits, GLAAD has grown to produce media reference guides, hold media awards shows, and publish the annual "Where We Are on TV Report." This report analyzes the overall diversity of broadcast programming as well as the representation of LGBTQ+ characters on cable and streaming services. As the socio-political climate has begun to change in popular culture, and an increased emphasis on inclusion and diversity persists, media moguls are becoming more aware of the importance of inclusion not just in terms of representation but the purchasing power of audiences clamoring to see their identities on screen. The ability to connect with characters and storylines are what keep people coming back week to week, and as such, creating specific audiences that can be more easily understood and communicated to. The "Where We Are On TV" report published at the end of television season, typically denoted from early fall to late spring, helps provide insight on which issues, peoples, and communities are being addressed at one of the most watched levels and what still needs to be done.

CBS and *The Big Bang Theory*

CBS

One network has ranked both the best in Nielsen ratings and worst in the "Where We Are On TV" report — CBS. CBS (an acronym for its original name, the Columbia Broadcasting System) was founded in 1927 as a radio broadcasting company to compete with the two NBC divisions and own some of the growing demand in radio. It eventually adapted to television and became one of the big three television networks, alongside NBC and ABC. During the original "Golden Age of Television," CBS debuted the smash hit sitcom *I Love Lucy*, which averaged 11 million families tuning in weekly, with only 15 million TV sets in the country. The show peaked in 1953 with the single highest Nielsen rating ever recorded at that point, a 71.7 rating and a 92 share (Anderson). From 1952-1961, CBS held the series with the highest Nielsen rating that season, and had two other hot streaks from 1971-1976 with *All in the Family* (CBS, 1971-1979) and again from 1979-1984 with *60 Minutes* (CBS, 1968-) and *Dallas* (CBS, 1978-1991). CBS had quickly established itself as the premiere broadcast network for televised entertainment and sought that longevity for years to come.

The content of CBS' original programming has also been influential for not just the company, but the television industry itself. *I Love Lucy* set the standard for American televised comedy and sitcoms alike, from its use of multiple cameras to film scenes and recording in front of a live audience. This format is still followed by the current number one comedy in America, *The Big Bang Theory* (CBS, 2007-)*.* In the 60s, CBS found that although their content was highly rated, their shows were attracting older and more rural audiences, compared to the urban yuppie audience advertisers

wanted. Known as the "Rural Purge," most of the hit shows such as *The Beverly Hillbillies* (CBS, 1962-1971) and *Green Acres* (CBS, 1965-1971) got the axe, setting a precedent for the power advertising had on television production. CBS also held the record for the most watched single U.S. television episode (77% of all U.S. television viewership), and still the most watched series finale of all time, when *M*A*S*H* (CBS, 1972-1983) bowed from the screen in 1983 (*TV By the Numbers,* 2009).

At the turn of 21st century, CBS diversified its content portfolio in foundational steps that would launch the station back to number one. It premiered two summer sleeper hits in the reality market, *Survivor* (CBS, 2000-) and *Big Brother* (CBS, 2000-) as well as the crime drama *CSI* (CBS, 2000-2015) that helped lure younger viewers back from NBC. It also packed its schedule with police procedurals such as *NCIS* (CBS, 2003-) and *Criminal Minds* (CBS, 2005-) and multi-cam sitcoms such as *Two and a Half Men* (CBS, 2003-2015) and *How I Met Your Mother* (CBS, 2005-2014). CBS became the premiere network once again in 2005-06 season, which launched CBS' infamous on-air promotions as "America's Most Watched Network." It has remained the top-rated network in America since its 2008-2009 season, beating out Fox's first entry to the number one spot thanks to *American Idol* a show that would become America's most watched primetime program for eight years. For the past few years now, CBS has lauded both *The Big Bang Theory* as "America's #1 Comedy" and *NCIS* as "America's #1 Drama."

In reference to GLAAD's "Where We Are on TV '16-'17" report, CBS did not fare well in terms of representation. The sample study found 895 series regular characters on 118 primetime scripted shows across the five major networks. For female

representation, CBS ranked fourth with 42% of their series regulars being women. For people of color (POC) representation, CBS and The CW tied for last place, where 31% of their series regulars are people of color. For LGBTQ representation, CBS ranked last with 2.2% of their series regulars being members of the LGBTQ community (*GLAAD,* 2017). The Los Angeles Times reported that of the six new series picked up for the fall 2016 season, all six star white men and that CBS is "the only broadcast network to not have a series built around a family of color," (Braxton, 2016). As America increasingly becomes more diverse, America's self-proclaimed "Most-Watched Network" fails to reflect the country it portrays.

The Big Bang Theory

The Big Bang Theory (*TBBT*) is a situational comedy that follows the likes of other immensely popular sitcoms such as *I Love Lucy, Seinfeld,* and *Friends.* Since the 2010-2011 season, *TBBT* has reigned as television's #1 comedy amongst Americans, and during the 2016-2017 television season, it officially claimed the title as "America's Most Watched Show," based on Nielsen ratings.[1] The series has also accumulated numerous accolades for its actors and writers, such as amassing 46 Primetime Emmy Award Nominations and four Emmy Awards for Outstanding Lead Actor in a Comedy Series for Jim Parsons. Not only has the show been hugely successful for its distributor,

---

[1] *This thesis will be forgoing the inclusion of NFL programs such as *Sunday Night Football* (NBC), *Thursday Night Football* (NBC), and *Thursday Night Football* (CBS) as the research is focused on scripted entertainment programming. In some instances, NFL programming has ranked higher.

but it has impacted popular culture, the science community, and everyday vernacular itself - "Bazinga!"- making it an important part of American Media history.

Created by Chuck Lorre and Bill Prady, the series follows a group of scientists living in Pasadena California as they navigate the balance between work and life. These four scientists (roommates Sheldon Cooper (Jim Parsons) and Leonard Hofstadter (Johnny Galecki), along with friends Howard Wolowitz (Simon Helberg) and Rajesh Koothrappali (Kunal Nayyar)), find their lives change when a new neighbor, Penny (Kaley Cuoco), an attractive aspiring actress from Omaha Nebraska, moves in across the hall. Their geeky intelligence and socially-awkward mannerisms clash with Penny's street smarts and pop culture knowledge, allowing for hijinks and hilarity to ensue.

The show positioned itself as a commentary on geek culture in America, which constitutes a large sub-group of men and women who identify with all things "geeky." Margaret Weitekamp describes the cultural sterotype as "an awkward, outcast individual who paired intense intellectual interests with social discomfort," (2015). With the arrival of computers in the late 60s and 70s, the computer geek was born, someone characteristically deemed to be less masculine. However, after the "late 1990s dot-com boom, geek became chic," with motion pictures such as *The Social Network* (Fincher, 2010), *Jobs* (Stern, 2013) and shows like *Silicon Valley* (HBO, 2014-) depicting geeks as millionaires and billionaires (Weitekamp, 2015). Today, geek culture commonly includes activities such as cosplaying (dressing up as a character from a popular film or television show), attending comic-cons, playing video games and role-playing games like Dungeons & Dragons, collecting comic-books and so on. Oft represented as thin, lanky, nerds with acne and glasses, the idea that those who identify

with the community would see new representation on screen both excited and scared audiences. The ability to see honest depictions of identities televised is powerful, and as CBS commands an impressive hold on American audiences, *TBBT* had the potential to be another success for the network.

When *The Big Bang Theory* premiered in 2007, the show was smothered under the network's lineup of other impressive CBS sitcoms, such as *Two and a Half Men, How I Met Your Mother, Rules of Engagement* (CBS, 2007-2013)*,* and *The New Adventures of Old Christine* (CBS, 2005-2010)*.* It wasn't until the summer of 2009 when CBS began to air episodes after reruns of *Two and a Half Men,* another show created by Chuck Lorre, which brought in new viewers and began to grow the show's popularity before its season 3 debut that September. After its fourth season, *TBBT* beat out the eight-year reigning comedy champ *Two and a Half Men,* yet it still ranked second in the 18-49 demographic behind *Modern Family* (ABC, 2009-). By its sixth and seventh season it was the highest rated and viewed scripted show in the 18-49 demographic (*TV By The Numbers,* 2013). According to CEG Tek, International, "*TBBT* was the most illicitly shared CBS program and the second most shared overall." As of the 2017-2018 season, *TBBT* is in its eleventh season and is renewed for a twelfth season the following year. While some credit the show's success to off-network syndication on channels such as TBS, which is the licensing of a program that originally ran on network TV, and others postulate that it was the timeslot change, some critics point to the writers deepening the characters backstories and interpersonal relationships (Schneider, 2013). No matter the cause, it goes without argument that *TBBT* has

immense viewership among both young demographics and the overall American audience as a whole.

The show follows the same format of the network's other standard sitcoms, which includes filming in front of a live-studio audience, utilizing soundstage sets, multi-camera angles, and an episodic format that allows audience to come and go from the narrative, with each episode storyline wrapped up before the credits roll. The power of this type of television, while to some feels outdated, is its watchability. Laugh tracks cue audiences to join in, the same few studio sets make audiences feel at home, and the sheer number of short episodes make it digestible. With approximately 24 episodes per season, and a run time ranging from 18-22 minutes, spread over 11 seasons, there's roughly 100 hours of carefully crafted comedy based around very similar sets and plots. Audiences feel privy to see the same living room, lunch spot, and friend's apartment and watch these characters lives slowly grow and unfold, in messy-love triangles, dramatic departures, and exciting promotions.

The content of *TBBT* has varied from its earlier seasons to its more recent in terms of plotting, yet, the underlying themes of science and geek-culture remain persistent. In its first two seasons, *TBBT* focused primarily on scientific jargon, word play, and puns for its set-ups and joke deliveries. Near the end of the third season, however, the show transitioned into vamping up the love lives of its leads, most notably creating relationship plotlines for Leonard and Penny in S03EP01 "The Electric Can Opener Fluctuation," Howard and Bernadette in S03Ep05 "The Creepy Candy Coating Corollary," and Sheldon and Amy in S03EP21 "The Lunar Excitation." In season four, the show promoted love interests Bernadette Rostenkowski-Wolowitz (Melissa Rauch)

and Amy Farrah Fowler (Mayim Balik). In later seasons, characters moved in together, got married, broke up, and even travelled to space. While audiences have grown to love these characters based on their backstories, personalities, and arcs, several issues still plague the series regarding diversity and representation.

Though there is some diversity on the show, the show typically reduces it as an example to make a joke about a culture or minority and not explore it more deeply. Out of the current eight series regulars, only Rajesh is a person of color, an Indian man who practices the Hindu religion. Three of the eight leads are women and none of the eight lead characters are a part of the LGBTQ community. Referencing back to the annual GLAAD "Where We Are on TV" report, *TBBT* does little to increase visible diversity on screen in comparison to other CBS properties, such as *Star Trek: Discovery* (CBS All Access, 2017-), which features and emphasizes variety of minority, female, and LGBTQ characters. In juxtaposition, the female characters on *TBBT* have received notably less developed character arcs than the male characters, which effects the way audiences connect with the story.

The Women of *The Big Bang Theory*

The image of scientists on screen, especially outside of their white lab coat and goggles that so commonly characterize the profession, can both be beneficial and detrimental to breaking down the barriers between scientists and everyday American citizens. The showrunners have worked hard to craft well though-out storylines for its main four male characters that illicit empathy by positing them as the underdogs in society, yet this positioning of the characters was not always the case. Before the show

aired in September 2007, an unaired pilot was produced for the 2006-2007 television season that barely resembled anything to the show as it is today. The original female lead was to be a hardened, headstrong character named Katie (Amanda Walsh), whose softer and more feminine side would be revealed over time as she grew to know Sheldon and Leonard. Test audiences reacted poorly to the character, finding she was too harsh compared to the lovable, affable male scientist duo. In the second edition of the pilot script, Penny was created, yet before she became the earnest Midwestern girl audiences saw in the aired pilot, she was a crazy party girl, with no limits and pictures of her ex-boyfriend to burn (Weitekamp, 2015). After three tries, the male writers got a female character audiences would like, but the question still begs to be asked: are there well-written female characters on *TBBT*?

The representation of women in *The Big Bang Theory* has been a polarizing point for critics and audiences alike. When the show first aired, Penny was the series' only female lead, but quickly *TBBT* added two more female leads, Bernadette and Amy. Penny's character serves as the comedic foil to the men, "a reassuring outsider who can give viewers who do not identify with the scientists an entry point into scenes that are heavy with technical jargon," (Weitekamp, 2015). Her character has also notably never been given a last name, which usually designates that the role is underdeveloped, this quirk manifested into a running gag for the cast and crew. Bernadette and Amy, on the other hand, are not viewed in the same light as audiences, for the former is introduced as the nasally, over-achieving nerd and the latter is framed as a monotone, defeminized researcher. These two characters fall into what science historian Margaret Rossiter has

dubbed 'the Matilda effect,' which is "the tendency to have [women's] devalued or co-opted by male colleagues," (Rossiter, 2015).

It is important to note that *TBBT* offers representation of women in STEM in a setting that has otherwise not been seen on network television. The show also features other female scientists guest stars, such as the experimental physicist character Leslie Winkle in season one, which opened opportunities for further representation on screen. In response to those claiming there are not enough women on the show, Saltzberg mentions "the [female-male] ratio is actually higher on the show than it is in my part of the field," (Heyman, 2008). Actress Mayim Bialik, who plays Amy, actually holds a PhD in neuroscience herself, and once hired on, worked with Saltzberg behind the scenes to help review the biological science of the show. Still, the characters of Bernadette and Amy are never fully accepted as intelligent, successful women by the group, their scientific professions are more spoken of than seen on screen, and are all introduced as love interests to the men, failing to establish a character of their own, independent of their partner. In doing this, audiences may feel less attached to these characters, and as such, their potential to affect change in a viewer is limited. While the attention to the details of the female characters has been lacking, the attention to getting the science of the show right has not.

The Science of *The Big Bang Theory*

What makes *The Big Bang Theory* so unique is its direct connection to the scientific community. With guest appearances from famous scientists, to partnerships with respected scientific agencies, to simply highlighting the scientific process in an

authentic and accurate manner, CBS' hit sitcom has become one of the most watched science-based programs in America. David Saltzberg, the show's behind-the scenes resident experimental particle physicist, views "the show as a tool for science education: PBS' *NOVA* with rim shots," (Heyman, 2008). While prestigious journals and scientific reviews exist, as well as lectures, courses, and press releases, for many Americans, these outlets are inaccessible. As such, a 54% majority of Americans accrue the majority of information about science from general news sources, yet nearly "three-quarters of the public (73%) say the way the news media cover scientific research is a bigger problem than how researchers publish and share their findings (24%). In contrast with science news consumption, 81% of U.S. adults watch science-related content through entertainment at least sometimes (Funk et al. 2017). This means that millions of Americans are tuning in weekly to watch a show that explores various field of hard science that they may never come into contact with otherwise.

The scientific fields represented on *TBBT* range impressively with each character, and in doing so, help personify and contextualize the hard to grasp concepts. The show's lead characters work at Caltech, where Leonard is an experimental physicist, Sheldon a theoretical physicist studying quantum mechanics and string theory, Howard an aerospace engineer, Rajesh a particle astrophysicist, Bernadette a microbiologist, and Amy a neurobiologist. Much of the humor is derived from scientific formulas, discoveries, and phenomena. To stay accurate, the producers hired on David Saltzberg, an astrophysicist with a Ph.D. from the University of Chicago and current professor at UCLA, as one of the series' technical advisers. Saltzberg has worked on two types of particle accelerations, the Cyclotron and Large Hadron Collider, and is a

respected figure in the scientific community (Watercutter, 2011). When not conducting experiments or teaching courses, his role on the show includes reviewing scripts, refining language, suggesting props, and decorating whiteboards with formulas. He has been credited with injecting terms such as the Casimir effect, molecular positronium, and giant magnetoresistance (the subject of the 2007 Nobel Prize in physics) into certain scripts. *TBBT* also includes pronunciation guides for its actors to ensure that the scientific terminology used is accurate. The attention to scientific detail in the show has made it unique in the field it operates in, for unlike other shows with medical settings (*Grey's Anatomy* [ABC, 2005-]) or criminal investigations (*CSI*), the writers work diligently to get the science right.

While many scientists in the community fear how science-related entertainment may taint audience's perceptions, support, and understandings of science, the Pew Research Center found that more Americans think that television shows and movies help rather than hurt their understanding (Funk et al. 2017). Saltzberg has similarly found allies of the show such as Rebecca Thomspon-Flagg, public outreach specialist for the American Physical Society, and Jennifer Ouellette, a writer for the particle physics magazine "Symmetry," as well as its editor David Harris. Though there are various online dissenters, voicing their opinions on sites such as "Reddit," "The A.V. Club," and the fandom generated Wikia site "The Big Bang Theory Wiki," the majority of experts agree that *TBBT* excels in terms of science representation.

The Potential of *The Big Bang Theory*

Balancing both the flawed character issues and the positive scientific elements of *TBBT,* the series has positioned itself at an interesting crossroads that allows for reputable brands and public figures to endorse. Because of the methodological approaches the show takes to ensure accuracy, it's able to attract notable scientists to the show to guest star as themselves, without jeopardizing their reputations. Guest stars have included physics outreach specialist and television personality Neil deGrasse Tyson ('The Apology Insuffiency'), Bill Nye ('The Proton Displacement'), astronaut Buzz Aldrin ('The Holographic Excitation'), entrepreneur Elon Musk ('The Platonic Permutation'), theoretical physicist Brian Greene ('The Herb Garden Germination'), astrophysicist George Smoot ('The Terminator Decoupling'), and Apple co-founder Steve Wozniak ('The Cruciferous Vegetable Amplification'). The series also fostered an extensive relationship with the late groundbreaking British theoretical physicist Dr. Stephen Hawking, who served as the hero for the main four male scientists. Hawking appeared in appeared in seven episodes, the first being 'The Hawking Excitation," in season 5 and the last being 'The Proposal Proposal' in season 11. The ability to attract such notable figures in science and have them appear on a science-based program not only helps validate the science of the show but the potential it has to affect audiences.

In the next section, this thesis will posit the potential entertainment television has in changing American social behaviors through a hypothetical case study of *The Big Bang Theory* and the United Nations' Global Goals. Through a coding breakdown of the series, as well as applying the research gleaned from product placement, public service announcements, and science communication, this thesis will postulate that *The*

Big Bang Theory can be one of the most effective methods in communicating climate

change to an audience of Americans who may not currently agree with, act upon, or

know of it. The paper will end with three key takeaways that can be applied to a variety

of entertainment programming looking to infuse a series' narrative with a publically-

sponsored message.

Methodology

The first step to understanding *The Big Bang Theory* was to watch the show and analyze it for any themes, characters, or plot devices that mentioned issues relating to the United Nations' Global Goals. As the goals are so expansive, my research was primarily interested in climate change communication and the representation of characters on screen, for having authentic characters audiences can connect to instead of simply laugh at is imperative. For the purpose of this study, I only focused on the seasons surrounding the 2016 presidential election as a way to utilize public opinion polls about these topics and see if the writer's addressed any of them. Thus, I watched *The Big Bang Theory* from the mid-season hiatus of the 2014-15 season, the entire 2015-16 season, the entire 2016-17 season, and up until the mid-season hiatus of the 2017-18 season. If not enough relevant data was gathered from those seasons, I went back to previous seasons and watched episodes that did mention the issue of climate change.

To most successfully analyze the content of these characters and episodes, I created two tables that coded both by episode and by season. The first coding mechanism created, called "*The Big Bang Theory* Episode Breakdown" is based off the Global Goals developed by the United Nations. Within these 17 goals, I found three common themes emerge: Environment, Equality, and Economics. Using a quasi-coding mechanism, I designed a set of indicators underneath each of the three E's. The first coding breakdown will observe the content of each episode, wherein I watched for the presence or absence of themes. If subjects pertaining to climate change, poverty, classism, LGBTQ+ rights, etc. are present, I made a note of it to return to later. Next to

the breakdown I developed a section for notes which address topics discussed in the episode, ranging from product placement, sexist language, regressive stereotypes, and official organizations sponsored. Below you can see how the information is laid out, with this being a specific example for S08EP12 "The Space Probe Disintegration."

Title: "The Space Probe Disintegration"
Director: Mark Cendrowski

Big Bang Theory	S08EP12
Did the episode mention...	
Climate Change	N
Renewable Energy	N
Efficient Waste	N
Responsible consumption/ production	N
Poverty	N
Homelessness	N
Classism	N
Unemployment	N
Poor educational status	N
Guest Star?	N
Gender/Race/Etc.	
Hero/Victim/Villain	

NOTES:

-Amy is mad that George Lucas can talk through movie, but as Sheldon tells her, "you say one word you're banished to the kitchen."

-Raj and Howard visit a Hindu temple, Howard is afraid "they might rip my heart out like in *Indiana Jones and the Temple of Doom*"

-Raj talks about the intersection of his scientific life and his religious one

-NASA mentioned

-*Frozen* mentioned

-Penny is wearing something that would be worn in the "hookers and whores" department of work

Figure 3: "*The Big Bang Theory* Episode Breakdown"

The second coding mechanism, called "*The Big Bang Theory* Character Breakdown," is a character analysis of all the series regulars in the show for that respective season. I noted the character's race, sexual identification, ability, social status, religious affiliation, employment status, and type of employment. Further notes about the characters were observed and added to the specific episode breakdown. Here's an example of the coding breakdown.

The Big Bang Theory: Back Half Season 8

Program	Main character name	Actor	Race	Sexual identification	Differently Abled?	Social Status	Religion	Employed?	Type of job	Education Level
The Big Bang Theory	Leonard Hofstadter	Johnny Galecki	White	Straight	High IQ	Upper-Middle	N	Y (Caltech)	Experimental Physistc	Doctorate (Princeton)
The Big Bang Theory	Sheldon Cooper	Jim Parsons	White	Straight	Eidetic Memory / OCD / Aspergers(?)	Upper-Middle	Evangelical Christianity	Y (Caltech)	Theoretical Physicist	Doctorate
The Big Bang Theory	Penny	Kaley Cuoco	White	Straight	N	Upper-Middle	N	Y	Aspiring actress/ Cheesecake Factory/ pharmaceutic rep	Highschool (Omaha, Nebraska)
The Big Bang Theory	Howard Wolowitz	Simon Helberg	White	Straight (but joked about with Raj)	N	Upper-Middle	Judaism	Y (Caltech)	Aerospace engineer	Masters (MIT)
The Big Bang Theory	Rajesh Koothrappali	Kunal Nayyar	Indian	Straight (but joked about with Howard)	Selective mutism	Upper-Middle	Hinduism	Y (Caltech)	Particle astrophysicist	Doctorate (Cambridge)
The Big Bang Theory	Bernadette Rostenkowsk i-Wolowitz	Mellisa Rauch	White	Straight	N	Upper-Middle	Catholicism	Y	Pharmaceutic al Company	Doctorate
The Big Bang Theory	Amy Farrah Fowler	Mayim Bialik	White	Straight	N	Upper-Middle	Catholicism (?)	Y	Neurobiologi st	Doctorate (Harvard)
The Big Bang Theory	Stuart Bloom	Kevin Sussman	White	Straight	N	Lower-Middle	N	Y	Comic Center store owner	Bachelors (RISD)

Figure 4: "*The Big Bang Theory* Character Breakdown"

After completing a coding breakdown of each episode in those specific seasons, I identified key episodes that dealt with the topic of climate change. I analyzed the context of the subject matter in the narrative to see if it was mentioned in a positive, neutral, or negative light. Once establishing the current messaging of climate change and United Nations related content inside *TBBT*, I evaluated how the show has incorporated product placements, public service announcements, and partnerships throughout its series run so far. This was to see the potential of *TBBT* developing a relationship with the UN to incorporate its Global Goals. Lastly, using the coding breakdown and outside sources, I developed a character case study of main character Sheldon Cooper and the role he plays in the show's relatability and popularity. This next section will elaborate on these findings in greater detail.

Research Findings

Coding Breakdown Analysis

While *The Big Bang Theory* is a show rooted in science, in the specific seasons I watched, only one episode specifically mentioned the term "global warming." In S10EP17 "The Comic-Con Conundrum," Sheldon and Raj are discussing Raj's finances, for which he is currently not in control of. One of his outstanding credits on his emergency card is to the LA Zoo, prompting Sheldon to ask Raj, "What kind of emergency happened at the LA Zoo?" Raj responds, "I sponsor a penguin. They're losing their home to global warming, my car gives seven miles to the gallon and I felt bad." In this instance, global warming is directly mentioned, yet it's in the context of a joke where Raj is being "reckless" with his funds by helping save the penguins, which in actuality is a major concern for many environmentalists. This same passive joke can be seen two episodes earlier, in S10EP15 "The Locomotion Reverberation," where Leonard and Howard are working in their laboratory, constantly wishing for Sheldon to leave so they can get some work done. Leonard tells Howard, "At least it's quiet when he takes bathroom breaks." Howard responds, "I know, that's why I keep refilling his water when he's not looking." Leonard replies, "You're kidding." Howard admits, "I don't care if we're in a drought, it's worth it." This line directly refers to the drought plaguing California, which climatologists hypothesize has been worsened due to the rise in global temperatures. Once again, it's a throw-off line that turns a serious issue into a cheap joke.

Beyond those two episodes, there were no other direct mentions of climate change, global warming, or the effects of either. Not believing this was the only time

the show brought up the issue of climate change, I went back through previous scripts of episodes looking for key words on this subject. Only one episode emerged, which was S03EP13 "The Love Car Displacement," where Bernadette and Howard, who are newly dating, head to a panel with Sheldon, Raj, Amy and Leonard at the Institute of Interdisciplinary Studies symposium on "The Impact of Current Scientific Research on Societal Interactions" in San Francisco. While there, they meet a tall, attractive man named Glenn (Rick Fox) who turns out to be Bernadette's old college professor whom she dated for a year. Bernadette asks him, "Are you here for the conference?" Glenn responds, "Yeah, I'm doing a global warming panel." After some small talk, Glenn announces, "Well, I got to run. The panel's tomorrow morning. It's called, 'Remembering Snow: A Look Back.'" This may be the most explicit moment where global warming is mentioned not simply as a joke. Glenn can be inferred to be a climatologist, the only one the show has had on yet. While this could be a way for the audience to hear about a respected professor and scientist leading a panel on climate change, the moment is overshadowed by Howard remarking exasperatedly, "Please tell me he's your gay cousin," as he's insecure of his own manhood. What could have been an educational moment turns into a joke that pokes fun at the queer community and illustrates Howard's internalized self-doubt.

The other two moments of interest in the show that revolved around the United Nations and some of its goals relating specifically to climate change were in seasons 9 and 4. In S09EP10 "The Earworm Reverberation," Raj is hanging out in Howard's lab, talking to himself, while Howard is busy on the phone discussing his work with the Departments of Outer Space Affairs with a representative from the United Nations.

From analyzing other scripts, this is the only mention of the United Nations on *TBBT* and while it is passing, it is a sign that the writers acknowledge the organization and are not including it solely as a joke. The other moment, and this a very small moment at that, is in S03EP04 "The Pirate Solution," where a brief resemblance of renewable energy can be found when Leonard can be seen at one point wearing a shirt featuring an image of a wind farm. The inclusion of the United Nations in *TBBT's* narrative universe is important for establishing a link with the organization, as the show has previously fostered successful partnerships with other agencies in a mutually beneficial format. The next section will analyze specifically how *The Big Bang Theory* incorporated products and brands into its content, focusing on its mutually-beneficial partnership with NASA.

Product Placement Analysis

The *Big Bang Theory* utilizes pop culture references and brand names at rapid fire, which helps the show succeed in geek culture. This subculture is stereotypically referential, meaning those within the culture enjoy consuming a variety of branded content and then commenting on it, coopting it, and creating content of their own based off it. The show has so many instances of product placements and name dropping for other entertainment properties that fans have begun to catalogue what they hear and see on the show as if it was a scavenger hunt through a variety of online websites, blogs, and videos. For example, Penny works at The Cheesecake Factory, an actual chain restaurant with locations all around the United States. During season 5, Raj develops a relationship with Siri, the voice control AI service embedded on iPhones from Apple. In

nearly every episode of *TBBT,* at least one film, videogame, comic book, brand, or product is mentioned, yet the producers claim that none of it is done for profit.

Though *TBBT* claims there are no paid partnerships with brands on the show, products that are featured have seen huge success rates in brand memorability and favorability. Based on a Nielsen report in 2011, *TBBT* was included three times in Nielsen's "The Top 10 Most Remembered Branded Integrations – Dramas/Sitcoms," (*Nielsen,* 2011). These brands included Dungeons & Dragons from Wizards of the Coast Games, Milton Bradley's Twister, and the most remembered product placement of 2011, with a recall index of 271, at least 50 points higher from Red Bull in second place -- Purell. In S05EP07 "The Good Guy Fluctuation," Sheldon attempts to scare Raj by sneaking into his office and place a snake inside his drawer. As Sheldon handles the snake, he whimpers "Oh dear, oh dear, oh dear," before repeating that same syntax with the words "Purell, Purell, Purell," as he rushes to a bottle of the brand's hand sanitizer, coating his hands with it. Purell itself has been mentioned in at least five other episodes of the series, and is viewed positively not just because audiences love the character of Sheldon but the product is a representation of the character's values and his lifestyle, which remains very compartmentalized, clean, and sanitary. In response to an article released by "Business Insider" detailing the findings of Nielsen's 2011 study, show creator Bill Prady tweeted these statements regarding the show's stance on product placement:

Figure 5: Bill Prady's tweets about product placement on *The Big Bang Theory.*

While *TBBT* has had no financial agenda through its references, it has worked explicitly with governmental organizations to support its storylines.

One of the agencies that *TBBT* has specifically paired up with to sponsor in the series is the National Aeronautics and Space Administration (NASA). Throughout the series Howard Wolowitz, an aerospace engineer, is tasked with various missions from NASA, from developing inventions to be used in space, making speeches, and even journeying to the International Space Station himself. The first reference of NASA on the show occurs in S02EP08 "The Lizard-Spock Expansion," where Howard accidentally gets the Mars Rover stuck in a ditch. It's not until season 5, however, when the relationship between *TBBT* and NASA begins to fully develop. In S05EP05 "The Russian Rocket Reaction," a storyline is introduced that will extend an offer to Howard to travel to space and install the telescope he designed. Due to the scientific reputation *TBBT* had garnered before to this point, NASA reached out and offered not just resources that would help the show continue to remain as scientifically-accurate as possible, but one of their astronauts to appear on screen.

The ability of *The Big Bang Theory* to attach itself to reputable, governmental programs and public figureheads is one of its unique strengths in bridging the gap between scientific communication and the public. Dr. Michael Massimino, a former

49

NASA astronaut and veteran of two Space Shuttle missions, first appeared in S05EP15 "The Friendship Contraction," contacting Howard at his home via Skype to explain Howard's upcoming duties on Expedition 31 to the International Space Station. NASA saw this as a creative opportunity to foster public interest in the real ongoing ISS mission, even sending scientists to help with various elements of the production, including the set design, costumes, and script. Their work is notably felt in S05EP24 "The Countdown Reflection," the season five finale of *TBBT,* where Howard is launched to space with Massimino aboard a Russian *Soyuz* spacecraft.

What had been originally designed as a plot line to be resolved during the inter-season break, the ISS storyline became a major factor of season 6. While Howard returns to Earth in S06EP04 "The Re-Entry Minimization," lasting effects of the mission factor through the season and even into the seventh, with Massimino returning once more as a guest star in S07EP16 "The Table Polarization." Massimino spoke of the partnership saying:

 I think what it is, and why NASA has supported this — not only sending me out there, but sending the information they need to help with their show and helping them in any way — is that they are trying to represent the space program in a very truthful light and that means a very positive light. That they are trying to educate people in some way about what is going on with our space program. So for that part of it, I think it is a good thing because it reminds people we still have people flying in space (Pearlman, 2012).

In return, Chuck Lorre attended the Mars Science Laboratory (MSL) *Curiosity* landing at NASA's Jet Propulsion Laboratory (JPL) in Pasadena on NASA's behalf. The behind the scenes relationship with NASA has been reciprocal for years. In 2010, before the multi-season space storyline, a group of scientists from NASA's Blueshift team at the Goddard Space Flight Center developed an educational beach ball that is

printed with data from the Wilkinson Microwave Anisotropy Probe (WMAP). The ball can be seen on the bookshelf of Leonard and Sheldon's apartment, and when the team asked for an official still from the production company, Bill Prady invited the entire team to Warner Brothers Studio in California to tour the set themselves. In return, the Blueshift team brought with them products from their department for the show to use, from various items used in NASA missions, a Solar Dynamics Observatory poster, and a scale model of the James Webb Space Telescope (Masetti, 2010). These items can later be seen in the background of Rajesh's apartment in S04EP07 "The Apology Insufficiency." In 2011, the crew of the final space shuttle mission, STS-135, visited the set of *TBBT,* bringing with them flags flown on the space shuttle Atlantis (Pearlman, 2011). Though the astronauts didn't appear on air, the crew did pose for a photo with the cast, and in both instances, these visits highlight the show's dedication to honoring its relations to the scientific community and paving future roads into new outreach initiatives. When developing storylines that incorporate these partnerships, centering them around popular, empathetic characters is paramount to crafting a successful messaging campaign. In the case of *The Big Bang Theory*, the most positively viewed and narratively-realized character is Sheldon Cooper.

Character Analysis: Sheldon Cooper

Sheldon Cooper, portrayed by actor Jim Parsons, is one of television's most recognizable characters, from his graphic t-shirts, awkward mannerisms, and famous catchphrase "Bazinga!". As recently as January 2018 Sheldon was voted the Funniest TV character by the Ranker in their list "The Funniest Characters Currently on TV,"

which to this date has received over 159 thousand votes online (*Ranker*). Sheldon's popularity has even spurred a spin-off prequel series to *TBBT* called *Young Sheldon* (CBS, 2017-), which follows Sheldon Cooper's character at age nine, living in East Texas and attending high school due to his genius abilities. Unlike *TBBT, Young Sheldon* is set in 1989, filmed on a single camera set up, and features no laugh track. The series premiere, S01EP01 "Pilot," racked in 22.46 million viewers, and since then has averaged a steady 16.5 million viewers per episode (Porter, 2017). While many of these viewers overlap with *TBBT*, it's clear the character of Sheldon Cooper has immense likeability and viewership.

The character of Sheldon Cooper has many layers that blend a myriad of regional cultures and personal abilities. He comes from East Texas, raised by an Evangelical Christian household, and while Cooper denounces all religion in terms of science, his mother, played by actress Laurie Metcalf, semi-regularly appears in the series, bringing with her devout religious tendencies. Due to his intelligence, Sheldon started college at the age of 11, earned his first Ph.D. at the age of 16, and currently focuses on scientific theories such as string theory, particle cosmology, and particle physics phenomenology. Sheldon possess an eidetic memory and IQ of 187, among other traits associated with being a prodigy, such as social ineptitude, narcissism, and inability to relate emotionally with other people. Due to these factors, Sheldon Cooper has become an eccentric and recognizable character, whose quirks are only heightened when put in comparison to the top-billed character Leonard Hofstadter, Sheldon's roommate who often plays the "straight man" of the series. While most audiences love

the idiosyncrasies of the character, some scholars call attention to Sheldon's portrayal on screen.

Characters with disabilities on screen are an important step in bridging the gap between awareness and public perception, yet, sometimes these alter-abled characters' diagnoses are never explicitly mentioned. Such is the case for Sheldon Cooper, who by some TV critics, psychologist, and autistic self-advocates and activists have perceived to be "the most obviously autistic character on television." (Heilker, 2012). Actor Jim Parsons has also commented on this assumption, saying "Thinking [Sheldon's] autistic is an easy leap for people watching the show," (Walters, 2013). The writers explicitly refuse to diagnose Sheldon, however, as they are able to "move beyond labels and any societal assumptions or presumed implications," (*Time,* 2011). This has allowed for various moments in the show to comment on Sheldon's atypical behavior, with the character himself rejecting any of his tendencies as madness. Sheldon has stated more in more than six episodes, "I'm not crazy; my mother had me tested!" any time a character has called his actions in question, becoming a running gag that downplays any implications presupposed by outside scholars and audiences. While this allows audiences to make their inferences, which can be useful for certain individuals looking to attribute their own similarities with a televised character, it similarly leaves the door open for discussion of scientists on screen.

The image of scientists on screen, beyond the role of crime scene investigators or doctors, has been stereotypically negative. In entertainment media, a "mad scientist" trope has emerged, wherein scientists are presented as villainous, malicious, and crazy. This line of thinking reaches as far back as the early 1800's, where a consistent line of

thinking was found that viewed geniuses were not normal (Harbour, 2015). *TBBT* is cognizant of this tendency, however, with Sheldon and his colleagues embracing their "craziness" and intelligence as gifts that not many others can understand, and in some cases, even joking that Sheldon is "one lab accident away from being a supervillain." Some studies have found that exposure to science and technology through television entertainment "appears to cultivate a generally less favorable orientation towards science" due to unlikable portrayals of scientists, yet this is not the case for the Sheldon Cooper (Gerbner, 1987). So what connects audiences to this character? *Rolling Stone* critic Rob Sheffield notes that while "he is a geek who seems completely unlovable in many ways, [he] is never (or at least rarely) intentionally malicious, drawing out viewers' empathy and sympathies, even while he is clearly unable to adequately comprehend or manage those same emotions himself," (Sheffield, 2016). This line of thinking can be applied to the other scientists on *TBBT,* creating a show that has flipped the portrayal of science on screen to be positive rather than negative.

The nerdiness of the characters of *TBBT* has been portrayed more sympathetically than other nerdy characters on TV, however, making them relatable and easy to connect with. Characters like Steve Urkel in *Family Matters* (ABC/CBS, 1989-1998), were perceived as uncool, annoying, and ultimately a hindrance for the main characters, whose actions were solely comedic turns in the show's plots. In *Saved by the Bell* (NBC, 1989-1993), the character "Screech," was portrayed as the geeky misfit of the group, whose hammy antics and intolerable mannerisms have made him one of the most "annoying characters to have existed on television," (Arnold, 2018). The most obvious difference between the *TBBT* and other iterations of nerds on TV is that instead

of having the geek serve as a secondary character that only highlights the protagonists status as "normal" or "cool," *TBBT*'s primary character are all geeks themselves, and depicted with multi-layered backgrounds instead of a one-note grating appearance. The show works to get the details right of geek culture, from the set design, to detailed costumes, to nuanced references, which allows audience members in the geek culture to relate to the characters on screen. For *TBBT,* the characters' geeky hobbies and passionate fandom, blended with their ability to understand hard science, have been integral to the characters' friendship with one another, providing opportunities that are only humorous for audiences, but moments that allow these characters to express "resilience, persistence, and likability," (Weitekamp, 2015). Melanie Green and Timothy Brock note that "attachment to characters may play a critical role in narrative-based belief change," (Green and Brock, 2002). For the purpose of this study, attributing a social message intended to increase salience and enact change among audience members to a popular and relatable character is paramount for effectiveness. In the next section I will provide a list of three key suggestions gleaned from the research that showrunners, advertisers, and organizations alike can use to change social behaviors.

Application

The process between getting people to hear a message, actually understanding it, and finally acting upon it is multifaceted. One show that saw the effects of its programming on the general populace was *Law & Order* (NBC, 1990-2010). *Law & Order* is half a police procedural and a half legal drama, with its plot revolving around crimes in New York City, following the crime scene investigation up until the prosecution of the defendant in court later that episode. One study from Washington State University, published in the *Journal of Health Communication*, explored the relationship between rape-myth acceptance and the viewings of three procedural franchises: *Law & Order, CSI,* and *NCIS*. Unlike the latter two series, the study found that college freshmen who were exposed to *Law &* Order had "greater intentions to seek consent for sexual activity, greater intentions to refuse unwanted sexual activity, and greater intentions to adhere to decisions related to sexual consent," (Hust et al. 2015). The study explored what the difference between *Law & Order* and *CSI* had in affecting viewers perception of the concept, and found that while *CSI* often depicts sexual assault in a manner that objectifies the victim and reinforces common rape myths, the team behind *Law & Order* and their efforts to glamorize rape and portray the harsh punishment of the crime, have been more influential. Thus, seeing honest depictions on screen has some lasting effect in educating mass audiences about the subject material at hand. These depictions can be sponsored or purely narrative driven, but their outcome often remains the same.

While *The Big Bang Theory* has been adamant in stating the series doesn't utilize paid product placements, it's clear the show partners with recognized

organizations both on screen and behind the scenes. Similar to how NASA saw the opportunity to promote its ongoing work with *TBBT*, the United Nations should develop a relationship with the show creators to implement a multi-episode story arc that includes elements of its Global Goals initiative. Specifically, the United Nations should focus on Goal 13: Climate Change by developing a plot that brings together the scientists of the series and climatology, the scientific study of climate. Since the show has such a reputable history of communicating factual phenomena and studies to its viewers, the inclusion of a storyline surrounding the study of global warming would highlight the dangers of climate change to a large audience, with members who may not know of, understand, or fully believe in it.

Through the research I have done, I have analyzed what is successful when embedding sponsored messaging into the narratives of popular programming. In doing so, I have developed a set of three key takeaways that can be applied across a majority of broadcast network television, specifically shows that fall into the sitcom genre. I will present these findings below with a furthered application for how the United Nations can utilize *The Big Bang Theory* to implement the messaging of their Global Goals, specifically, climate change.

1.<u>Reciprocal Relationship</u>

The first takeaway developed deals with the relationship between series and sponsor. Working to incorporate a message into a narrative can be made easier by having a well thought out working partnership, in which the goals of both the series and the sponsor are understood and highlighted. For example, the previous relationship the

team behind *TBBT* established with NASA is evidence of the success between a publically recognized effort. While it wasn't on the front page of national newspapers, information about the partnership ran on various online and trade magazines, as well as being featured on the websites for both NASA and *TBBT*. Content from the show can be repurposed for other media outlets as well, as such was the case for the *Glee* PSA about texting and driving.

This relationship extends between series and viewer as well, who up to this point have remained loyal to the show over an extended period of time. "Those who seek out entertainment more frequently may be more susceptible to the public narratives that often comprise media persuasion," (Shrum, 2012). Respecting the audience members by ensuring the show doesn't lose the quality that attracted viewers in the first place is imperative. Instead of turning an episode, or series of episodes, into a more "traditional" advertisement that viewers typically look to avoid, the message should be interwoven with the plot in an authentic manner that feels real to audience members. This leads to point two, detailed below.

2.<u>Plot Connectivity</u>

When embedding a product, brand, or social message into a narrative, in order to increase salience and action among viewers, it is important to attribute the highlighted product to a central plot or storyline. This is done through a process in which the sponsored message can receive a high level of activation amongst its audiences by not only being a central focus within a scene, but also serving as an enabler that aids in comprehending the story. An enabler is when "the brand plays a role in allowing some

form of action or movement to occur within the story," (Shrum, 2012). Brands can exist in television series in a myriad of ways, from a spoken reference from a character, a single time usage of the product without mention, or as a plot device that furthers the action of the story and its characters. Studies have found that brands that feature their products or message in a highlighted way find higher purchase rates and social action, such as the case for Reese's Pieces in *E.T.,* the BMW Z3 in *GoldenEye,* and Eggo waffles in *Stranger Things.* How those products are spoken about, dealt with, and influential in the narrative comes from the third and final takeaway.

3.<u>Trusted Characters</u>

The final recommendation for a show to successfully incorporate a message into its program to create social change is to have it spoken and its effects felt by trusted characters. Audiences feel they can trust the characters they have come to watch struggle and grow over the series' run. Studies have found that viewers that are highly connected with characters, "were not only more likely to pay attention to and to be interested in the brands portrayed in their shows but also that they responded more positively to product placement efforts," (Shrum, 2012). This applies typically to series leads that are portrayed in a favorable light, unlike small reoccurring characters and guest cameos, whose relationship with the audience is not developed enough to impact any social change. As for the messages themselves, studies have found that if the product or message creates some positive growth for the character's story arc and development, audience's favorability of said sponsor increases. If the message or product is negative, and has an adverse effect on the protagonist, their favorability of

the sponsor decreases. Thus, the message must have some upward growth for the narrative and characters included.

The Big Bang Theory Potential Storyline

In working to apply these three takeaways into a hypothetical partnership between *TBBT* and the United Nations Global Goals, I have drafted a set of recommendations the show could take. The first would be for the communications team at the United Nations to reach out to the producers of *TBBT* and establish a meeting where both parties can see if they have a vested interested. Once completed, the show's writers would work with members of Goal 13: Climate Change to brainstorm a list of small actionable items they want audiences to pick up on, as well the thematic element for the overall storyline. I propose a three-episode story arc that finds one character being recruited by the United Nations to work on climatology. As Howard has already established a relationship with the United Nations in a previous episode of *TBBT*, a plot could be developed where Howard is reached out to again about the issue of climate change due to his work in space and the mission's study of atmospheric effects. Glenn, Bernadette's old professor and Howard's sworn enemy, could now work for the United Nations, as he was previously established as a climatologist, and be the contact point between Howard and the sponsored message, similarly pleasing long-time viewers in the process. To Howard's displeasure, he would recruit the help of friend Sheldon Cooper, however, for maximum effect with the audience.

As mentioned, a very important takeaway to keep in mind is the actual character delivering the message. In the case of *TBBT,* would Amy mentioning climate change

not go over as well as Sheldon because of her character's portrayal on screen and the limited emotional relationship the audience may have in her because of it? Sheldon Cooper has been shown to be a fan favorite for a multitude of reasons, and as such, should be the central focus in highlighting the United Nations' goals. After meeting with representatives in California, while Howard primarily works to establish some product that can be used in space to better analyze the atmospheric effects of climate change, Sheldon could become obsessively determined to change his behaviors to better meet the United Nations' goals, such as composting, turning off the lights always, and using scarce amounts of water. These actions can be displayed humorously, as it is a comedy, but near the end of the second of the three episodes, Sheldon would have a "Bazinga!" moment in which he connects elements of his work in theoretical physics and climatology. This breakthrough would immediately skyrocket him past the work that his colleague Howard is doing. This positive effect for Sheldon would be viewed favorable by audiences and show that even respected scientists outside of the field of climatology, albeit fictional, acknowledge the issue and adapt in ways to fix it.

Outside of the show, the United Nations could use content licensed from *TBBT* on their own social channels to increase engagement. The cast of *TBBT* could visit the United Nations headquarters while delegates from the U.N. could similarly come visit the set. Akin to the NASA sponsorship, these actions show the reciprocal relationship between show and sponsor, and the narrative built around it are central to the storyline for a character audiences know and care about. In doing this, the United Nations can successfully use entertainment media, specifically *TBBT,* to impart their message and create meaningful social change among American audiences.

Conclusion

The ability to effectively merge social behavior messaging into entertainment television is not an easy process, as it requires detailed work from both the sponsor, series, and audience members watching. In an era where the public has become distrustful of typical media channels such as advertising and broadcast news, entertainment television has had the unique ability to affect audience members during a time they are more receptive to change. Studies done surrounding the Uses and Gratifications theory looks at how audience members engage with certain media channels, and for those watching narrative television, that use is often an escape from reality and excuse to spend time with a cast of characters they have seen grow and develop over the years. These characters have profound effects on audience members and advertisers, marketers, nonprofit organizations, and governmental agencies can utilize these fictional characters as figureheads for their brands or messages to highlight a purpose among a majority of Americans. This is done through a three-step process where sponsors and brands must build (1) reciprocal relationships, write a storyline that ensures the sponsored message has high (2) plot connectivity, and base that storyline around a popular, positively viewed (3) trusted character that audiences have demonstrated they enjoy and agree with. In the case of *TBBT* and the United Nations, I have provided a template that could be followed to showcase how a partnership between the two could work seamlessly into the programming. As *TBBT* remains to be number one in ratings both amongst younger viewers and the American audience as a whole, it is a powerful media catalyst with the potential for conveying important messages to a majority of Americans. In the end, what does America's most watched

show say about America, and what can we do to ensure that message is pertinent for its citizens without losing the art and craft behind the work? Never discount the power of entertainment television, because the moment you do is the moment you've already been sold on a new idea without even knowing it – Bazinga!

Bibliography

Anderson, Christopher. "'I Love Lucy." *Encyclopedia of Television*, Edited by Horace
Newcomb, Museum of Broadcast Television,
www.museum.tv/eotv/ilovelucy.htm.

Ang, Ien. *Desperately Seeking the Audience*. Routledge, 1991.

Arnold, Nathaneal. "10 Of the Worst TV Characters of All Time." *The Cheat Sheet*,
The Cheat Sheet, 12 May 2018, www.cheatsheet.com/entertainment/10-worst-
tv-characters-all-time.html/?a=viewall.

Braxton, Greg. "Six New CBS Series, Six White Male Leads. With Prime-Time
Diversity Growing, How Did the Network Fall behind?" *LATimes*, Los Angeles
Times, 8 Aug. 2016, www.latimes.com/entertainment/tv/la-et-st-cbs-so-white-
fall-20160801-snap-story.html.

CBS Cares. *Kaley Cuoco on Breast Cancer*. CBS, 2008,
www.cbs.com/cbs_cares/topic/breast-cancer/video/934726411/kaley-cuoco-on-
breast-cancer/.

Cook, John, et al. "Consensus on Consensus: a Synthesis of Consensus Estimates on
Human-Caused Global Warming." *Environmental Research Letters*, vol. 11, no.
4, 13 Apr. 2016. *IOP Publishing*, doi:10.1088/1748-9326/11/4/048002.

Dessart, George. "Public Service Announcements." *Encyclopedia of Television*, Edited
by Horace Newcomb, Museum of Broadcast Television,
www.museum.tv/eotv/publicservic.htm.

Everett, Anna. "'Golden Age' of Television Drama." *Encyclopedia of Television*,
Edited by Horace Newcomb, Museum of Broadcast Television,
www.museum.tv/eotv/goldenage.htm.

"FACT SHEET: U.S. Global Development Policy and Agenda 2030." The White
House, 27 Sept. 2015, obamawhitehouse.archives.gov/the-press-
office/2015/09/27/fact-sheet-us-global-development-policy-and-agenda-2030.

Fournier, Susan and Robert J. Dolan. "Launching the BMW Z3 Roadster." Case Study
No. N9-597-002. Harvard Business Publishing, 1997.

Frenkel, Sheera, and Katie Benner. "To Stir Discord in 2016, Russians Turned Most
Often to Facebook." *The New York Times*, The New York Times, 17 Feb. 2018,
www.nytimes.com/2018/02/17/technology/indictment-russian-tech-
facebook.html.

Friedman, Uri. "Trust Is Collapsing in America." *The Atlantic*, Atlantic Media
Company, 21 Jan. 2018,
www.theatlantic.com/international/archive/2018/01/trust-trump-america-
world/550964/.

Funk, Cary, et al. "Science News and Information Today." *Pew Research Center's
Journalism Project*, Pew Research Center, 20 Sept. 2017,
www.journalism.org/2017/09/20/science-news-and-information-today/#.

Gallup, Inc. "Media Use and Evaluation." *Gallup.com*, Gallup Inc., 2017,
news.gallup.com/poll/1663/media-use-evaluation.aspx.

Gerbner, George. "Science on Television: How It Affects Public Conceptions." *Issues
in Science and Technology*, vol. 3, no. 3, 1987, pp. 109–115.

Gian, Dave. "This Massively Ambitious UN Campaign Aims to Be in Cinemas Around
the World." *Adweek*, Adweek, 24 Sept. 2015, www.adweek.com/brand-
marketing/massively-ambitious-un-campaign-aims-be-every-cinema-world-
167115/.

Giddens, Anthony. *The Politics of Climate Change*. Polity, 2009.

"Goal 13: Climate Action." *The Global Goals*, United Nations ,
www.globalgoals.org/13-climate-action.

Green, M. C., & Brock, T. C. "In the mind's eye: Transportation-imagery model of
narrative persuasion." *Narrative impact: Social and cognitive foundations*, 2002,
pp. 315–341.

Harbour, Wendy. "The Big Bang Theory: Mad Geniuses and the Freak Show of Higher
Education." *Review of Disability Studies: An International Journal*, vol. 11, no.
2, 2015.

Hawkins, Ed, and Phil D. Jones. "On Increasing Global Temperatures: 75 Years after
Callendar." *Quarterly Journal of the Royal Meteorological Society*, vol. 139, no.
677, 21 June 2013, rmets.onlinelibrary.wiley.com/doi/abs/10.1002/qj.2178.

Heilker, P. "Autism, rhetoric, and whiteness." *Disability Studies Quarterly,* vol. 32, no.
4, 2012.

Herbst, Larissa. *Product Placements on 'The Big Bang Theory.' Vimeo*, Vimeo, Inc., 2
Sept. 2013, vimeo.com/73632695.

Heyman, Karen. "Talk Nerdy to Me." *Science*, vol. 320, no. 5877, 9 May 2008, pp.
740–741., doi:10.1126/science.320.5877.740.

@imTerrah. "I'm never texting and driving again just because of this episode of #glee."
    Twitter, 26 Dec. 2012, 3:03 a.m.,
    twitter.com/imTerrah/status/283890770438651905

Kirby, David. "The Changing Popular Images of Science." *The Oxford Handbook of the
    Science of Science Communication*, by Kathleen Hall Jamieson et al., Oxford
    University Press, 2017.

Kwatra, Anjali, and Wynne Boelt. "World Leaders Adopt Sustainable Development
    Goals." *UNDP*, United Nations Development Program, 25 Sept. 2015,
    www.undp.org/content/undp/en/home/presscenter/pressreleases/2015/09/24/und
    p-welcomes-adoption-of-sustainable-development-goals-by-world-leaders.html.

LaMay, Craig. "Public Service Announcements, Broadcasters, and the Public Interest:
    Regulatory Background and the Digital Future." Working paper, Institute for
    Policy Research, Northwestern University, Evanston, 2001.

Leiserowitz, Anthony, et al. *Climate Change in the American Mind: May 2017*. Yale
    Program on Climate Change Communication, 2017, *Climate Change in the
    American Mind: May 2017*,
    climatecommunication.yale.edu/publications/climate-change-american-mind-
    may-2017/.

Masetti, Maggie. "NASA Goes to the Set of CBS's 'The Big Bang Theory'." *NASA*,
    NASA, 15 Nov. 2010, www.nasa.gov/topics/nasalife/features/nasa-cbs.html.

Mcintosh, Heather. "Representations of Female Scientists in The Big Bang
    Theory." *Journal of Popular Film and Television*, vol. 42, no. 4, 17 Dec. 2014,
    pp. 195–204., doi:10.1080/01956051.2014.896779.

Mehling, Harold. *The Great Time-Killer*. World Pub. Co., 1962.

Monllos, Kristina. "The United Nations Is Working on the 'World's Largest Advertising
    Campaign'." *Adweek*, Adweek, 4 May 2015,
    www.adweek.com/news/advertising-branding/united-nations-working-worlds-
    largest-advertising-campaign-164497.

NASA. "What's in a Name? Global Warming vs. Climate Change." *NASA*, National
    Aeronautics and Space Administration, pmm.nasa.gov/education/articles/whats-
    name-global-warming-vs-climate-change.

Newell J, Salmon CT, Chang S. "The hidden history of product placement." *J
    Broadcast Electron Media.* 2006, pp. 575-594. doi:
    10.1207/s15506878jobem5004_1

Otterson, Joe. "487 Scripted Series Aired in 2017, FX Chief John Landgraf Says." *Variety*, Variety, 5 Jan. 2018, variety.com/2018/tv/news/2017-scripted-tv-series-fx-john-landgraf-1202653856/.

Pearlman, Robert. "Behind the scenes with Big Bang Theory's real-life astronaut actor." *collectSPACE*, 10 May, 2012. http://www.collectspace.com/news/news-051012a.html

Pearlman, Robert. "STS-135 Crew's Visit to The Big Bang Theory - CollectSPACE: Messages." *CollectSPACE*, 24 Aug. 2011, www.collectspace.com/ubb/Forum3/HTML/004401.html.

Poggi, Jeanine. "Flashback Friday: TV's First Commercial Ran 75 Years Ago Today." *Ad Age*, Crain Communications, 1 July 2016, adage.com/article/media/flash-back-friday-tv-commercial-ran-75-years-ago-today/304777/.

Porter, Rick. "'This Is Us' and 'The Good Doctor' Score Big in Premiere Week Broadcast Live +7 Ratings." *TV By The Numbers*, Tribune Media Entertainment, 13 Oct. 2017, tvbythenumbers.zap2it.com/dvr-ratings/broadcast-live-7-ratings-sept-25-oct-1-2017/.

Project Everyone. "Healthy Not Hungry." *Project Everyone*, United Nations, www.project-everyone.org/case-studies/healthy-not-hungry.

Project Everyone. "International Day of the Girl 2017." *Project Everyone*, United Nations, www.project-everyone.org/case-studies/international-day-of-the-girl-2017.

Project Everyone. "What." *Project Everyone*, United Nations, www.project-everyone.org/.

Ross, Jeffrey N. "DOT Teams up with Fox's Glee against Distracted Driving [w/Videos]." *Autoblog*, Oath, Inc., 24 Aug. 2012, www.autoblog.com/2012/08/24/dot-teams-up-with-foxs-glee-against-distracted-driving/.

Rossiter, Margaret W. "The Matthew Matilda Effect in Science." *Social Studies of Science*, vol. 23, no. 2, 1993, pp. 325–341., doi:10.1177/030631293023002004.

Rusch, Erin. "Roundtable on Environmental Health Sciences, Research, and Medicine; Board on Population Health and Public Health Practice; Institute of Medicine." National Center for Biotechnology Information, *Global Development Goals and Linkages to Health and Sustainability Workshop Summary*, 23 Dec. 2017, www.ncbi.nlm.nih.gov/books/NBK202290/.

Russell, Cristel Antonia. "Investigating the Effectiveness of Product Placements in Television Shows: The Role of Modality and Plot Connection Congruence on Brand Memory and Attitude." *Journal of Consumer Research*, vol. 29, no. 3, 2002, pp. 306–318. *JSTOR*, JSTOR, www.jstor.org/stable/10.1086/344432.

Saxon, Joshua. "Why Your Customers' Attention Is the Scarcest Resource in 2017." *AMA*, American Marketing Association, www.ama.org/partners/content/Pages/why-customers-attention-scarcest-resources-2017.aspx.

Schneider, Michael. "Bigger *Bang* Than Ever". *TV Guide*, 28 Jan. 2013.

Scott, Carole. "History of the Radio Industry in the United States to 1940." *EH.Net Encyclopedia,* edited by Robert Whaples. March 26, 2008. https://eh.net/encyclopedia/the-history-of-the-radio-industry-in-the-united-states-to-1940/

Sheffield, R. "The super nerd." *Rolling Stone,* Issue 1113, 16 Sept. 2016. pp. 56-57.

Shrum, L. J. *The Psychology of Entertainment Media: Blurring the Lines Between Entertainment and Persuasion*. Routledge, 2012.

Snead, Elizabeth. "Dianna Agron Stars in 'Glee' Anti-Texting PSA (Video)." *The Hollywood Reporter*, The Hollywood Reporter, 23 Aug. 2012, www.hollywoodreporter.com/fash-track/glee-dianna-agron-text-psa-video-365147.

Stacey J. T. Hust, Emily Garrigues Marett, Ming Lei, Chunbo Ren & Weina Ran. "*Law & Order, CSI*, and *NCIS*: The Association Between Exposure to Crime Drama Franchises, Rape Myth Acceptance, and Sexual Consent Negotiation Among College Students." *Journal of Health Communication,* vol. 20, no. 12, 2015, pp. 1369-1381. DOI: 10.1080/10810730.2015.1018615

Staff. "About the Campaign." *Smokey Bear*, The Ad Council, smokeybear.com/en/smokeys-history/about-the-campaign.

Staff. "About Us." *Nielsen*, The Nielsen Company, www.nielsen.com/us/en/about-us.html.

Staff. "Complete List Of 2012-13 Season TV Show Ratings." *TV By The Numbers*, Tribune Media Entertainment, 29 May 2013, tvbythenumbers.zap2it.com/1/complete-list-of-2012-13-season-tv-show-ratings-sunday-night-football-tops-followed-by-the-big-bang-theory-the-voice-modern-family/184774/.

Staff. "EXCLUSIVE: Star Trek: Discovery Producers on Ship's Design, Show's Themes." *TrekMovie.com*, SciFanatic Network, 24 July 2016, trekmovie.com/2016/07/24/exclusive-star-trek-discovery-producers-on-ships-design-shows-themes/.

Staff. "The Big Bang Theory Product Placement Scenes." *Product Placement Blog*, Amazon Services LLC, productplacementblog.com/tag/the-big-bang-theory/.

Staff. "The Funniest Characters Currently on TV." *Ranker*, Ranker, www.ranker.com/list/funny-current-tv-characters/ranker-tv?ref=browse_rerank&l=2&pos=4.

Staff. "Nielsen's Tops of 2011: Advertising." *Nielsen*, The Nielsen Company, 20 Dec. 2011, www.nielsen.com/us/en/insights/news/2011/nielsens-tops-of-2011-advertising.html.

Staff. "Nominees/Winners." *Emmys*, Academy of Television Arts & Sciences., www.emmys.com/awards/nominees-winners.

Staff. "Ratings - Frequently Asked Questions About Nielsen Ratings." *The Futon Critic*, 19 Sept. 2010, www.thefutoncritic.com/ratings.aspx?id=ratings_faq.

Staff. "Top 100 Rated TV Shows Of All Time." *TV By The Numbers*, Tribune Media Entertainment, 21 Mar. 2009, tvbythenumbers.zap2it.com/reference/top-100-rated-tv-shows-of-all-time/.

Staff. "10 Big Successes in Product Placement." *CNBC*, NBCUniversal, 29 Jan. 2014, www.cnbc.com/2011/06/03/10-Big-Successes-in-Product-Placement.html?slide=6.

Staff. "10 Questions for Jim Parsons." *Time, 177*(7), 21 Feb. 2011).

Stephens, Mitchell. "The History of Television." *Grolier Multimedia Encyclopedia*, 2000. *NYU*, www.nyu.edu/classes/stephens/History%20of%20Television%20page.htm.

Stott, Peter A., et al. "Human Contribution to the European Heatwave of 2003." *Nature*, vol. 432, no. 7017, 2004, pp. 610–614., doi:10.1038/nature03089.

"Television History - A Timeline 1878-2005." *The University of Texas School of Law Tarlton Law Library Jamil Center for Legal Research* , Tarlton Law Library, 2012, tarltonapps.law.utexas.edu/exhibits/mason_&_associates/timeline.html.

The Big Bang Theory. Created by Chuck Lorre, and Bill Prady, CBS, 24 Sept. 2007.

UNDP. "Goal 13 Targets." *UNDP*, United Nations Development Programme, 26 Jan. 2016, www.undp.org/content/undp/en/home/sustainable-development-goals/goal-13-climate-action/targets/.

United States, Senate, House of Representatives, Congress. *Communications Act of 1934.*

Walters, S. "Cool aspie humor: Cognitive difference and Kenneth Burke's comic corrective in *The Big Bang Theory* and *Community.*" *Journal of Literary and Cultural Disability Studies,* vol. 7, no. 3, 2013, pp. 271-288.

Watercutter, Angela. "TV Fact-Checker: Dropping Science on The Big Bang Theory." *Wired*, Conde Nast, 22 Sept. 2011, www.wired.com/2011/09/tv-fact-checker-big-bang-theory/.

Weart, Spencer B. *The Discovery of Global Warming*. 2nd ed., Harvard University Press, 2008, history.aip.org/climate/public.htm.

Weart, Spencer B. *The Discovery of Global Warming*. 2nd ed., Harvard University Press, 2008, history.aip.org/climate/public2.htm.

Weart, Spencer B. *The Discovery of Global Warming*. 2nd ed., Harvard University Press, 2008, history.aip.org/climate/timeline.htm.

Weitekamp, Margaret A. "The Image of Scientists in The Big Bang Theory." *Physics Today*, vol. 70, no. 1, ser. 40, 2017, pp. 40–48. *40*, doi:10.1063/pt.3.3427.

Weitekamp, Margaret A. "'We're Physicists': Gender, Genre and the Image of Scientists in The Big Bang Theory." *The Journal of Popular Television*, vol. 3, no. 1, 2015, pp. 75–92., doi:10.1386/jptv.3.1.75_1

Wohl, Jessica. "How Eggo Is Playing Up Its Moment in the 'Stranger Things' Spotlight." *Ad Age*, Crain Communications, 16 Oct. 2017, adage.com/article/cmo-strategy/eggo-plays-moment-stranger-things-spotlight/310908/.

Where We Are On TV' 16–'17. GLAAD, 2017, glaad.org/files/WWAT/WWAT_GLAAD_2016-2017.pdf.