

Pitch Perfect at the Emmys: Unlocking the Signature of Award-winning TV Scores

Music Research

MU104

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Motivation and Purpose

The state of the 21st century music industry is almost identical to that of the music scene in 17th century Europe. While Bach and Mozart sought commission and patrons, today's musicians work towards record deals and sponsors. The artists of the modern age write amidst myriad cultural influences, social stigmas, and popular opinions, all while struggling to fund their careers and push the boundaries of their creativity. Composers who haven't won major awards have a difficult time establishing themselves in the industry, and artists since the Baroque period have worked to meet the same directives: write music that brings audiences, that evokes emotion, that isn't forgotten.

A formulaic approach to writing award-winning music has the potential to launch careers, attract large audiences, and eventually catalyze a shift in the industry's goals. In the realm of television, title themes and soundtracks may act as either audience magnets or audience deterrents.

The purpose of this project is to delineate qualities that make a piece of music more likely to win the Emmy for Outstanding Main Title Theme Music. It explores why only 19.4% of nominees receive the award, and builds on the research of mathematical philosopher John Myhill and musicologists Leonard Meyer and Deryck Cooke.

Hypothesis

There is a set of musical qualities that, when used, make a piece more likely to win the Emmy for Outstanding Main Title Theme Music.

Background Literature Review

There were three critical publications that shaped my approach to analyzing the theme sequences.

First, I referred to John Myhill's 1952 paper *Some Philosophical Implications of Mathematical Logic*.¹ In his work, Myhill applies two theorems that he regards as "psychological laws" to challenge the idea that beautiful music is formulaic. He uses Church's theorem to assert that "*there is no token (such as happiness) by which you shall know the beautiful when you see it.*" With Gödel's theorem, Myhill adds "*there is no school of art that permits the production of all beauty and excludes the production of all ugliness.*" These theorems, which posit that there is no recipe for beauty and that there is no musician who only writes beautiful pieces, encouraged me to research if the Emmy award for Outstanding Main Title Theme Music recognizes a certain type of music as being more beautiful, or more meaningful, than another type.

Second, I read Leonard Meyer's *Meaning in Music and Information Theory*² (1957) to understand the academic definition of meaningfulness in music. Meyer's main hypothesis is that "the psycho-stylistic conditions which give rise to musical meaning are the same as those which communicate information." He associates musical communication with the Markoff property, a property that defines stochastic processes (random processes in which a starting point offers no way of predicting consequent events). For Meyer, meaning arises when results deviate from expectations and the future becomes independent of the past. Using this definition of meaningfulness, I analyzed 22 Emmy-award-winning theme scores and compared them to 22 non-Emmy-

award-winning theme scores to study what level of meaningfulness warrants the award of being “outstanding.”

The third piece of literature I studied was Deryck Cooke’s *The Language of Music*³ (1959). Cooke’s primary argument is that beautiful music evokes emotion in its listeners. He writes that pieces of music with similar characteristics affect audiences in the way that multiple books that use the same words to discuss the same topic have the same effects on readers. Cooke’s thesis helped me focus my analysis on searching for identical characteristics between the Emmy winners. Using this method, I learned the most common way that award-winning themes affect television critics.

Research Methodology

Over the period of a week, I analyzed each of the 22 Emmy-winning theme songs to delineate its key signature, time signature, duration, tempo, and instrumentation.

Year	Emmy winner	Year	Emmy Winner
1993	Brooklyn Bridge ⁴	2004	Monk ¹⁵
1994	Star Trek: Deep Space Nine ⁵	2005	Desperate Housewives ¹⁶
1995	seaQuest DSV ⁶	2006	Masters of Horror ¹⁷
1996	Star Trek: Voyager ⁷	2007	The Tudors ¹⁸
1997	Murder One ⁸	2008	Pirate Master ¹⁹
1998	EZ Streets ⁹	2009	Great Performances ²⁰
1999	Fame L.A. ¹⁰	2010	Nurse Jackie ²¹
2000	Trinity ¹¹	2011	The Borgias ²²
2001	The West Wing ¹²	2012	Page Eight ²³
2002	Gideon’s Crossing ¹³	2013	DaVinci’s Demons ²⁴
2003	Six Feet Under ¹⁴	2014	Cosmos: A Spacetime Odyssey ²⁵

Table 1: The 22 Emmy-winning theme songs analyzed in this project.

I listened to each song 5 times to identify the 5 qualities studied, and played all 22 songs on the piano to confirm that my listening skills led me to the correct data. The intent of this step was to find similarities between the winners so that, as suggested by Cooke, I could learn if the Emmy-winning themes evoked similar responses from television critics.

Most Similar Theme Songs
Star Trek: Deep Space Nine
Star Trek: Voyager
The Tudors
The Borgias
DaVinci's Demons
Cosmos: A Spacetime Odyssey

Table 2: 6 songs expressed the most similarities and evoked the most common response. They were tested to discern their levels of meaningfulness.

I identified six songs that shared the most similarities. By Cooke's argument, these six songs evoked the most common response from television critics. To study the underlying meaningfulness, I tested for the presence of the Markoff property. I formulated six traits that contributed to Meyer's definition that a meaningful musical landscape is entropic. The traits tested for were:

1. Surprising endings or non-endings,
2. A sudden beginning,
3. Dissonance or deviation from the melody,
4. Melodic elements relevant to the theme of the television show,
5. Unique use of instruments, and
6. Theoretical elements relevant to the theme of the television show.

I created a rubric that identified the level at which each trait was present in the analyzed music. Numbers were assigned to each trait, with “1” meaning “not apparent” and “6” meaning “obviously apparent and completely unique.” Each song was listened to six times to identify the level at which each trait appeared. The data was mapped onto a radar chart. The largest, most regular polygons reflect the pieces that best demonstrate the Markoff property.

The control group for this research comprised of 22 popular TV shows that have not won the Emmy for their title themes. This group verified that the Emmy is not awarded on the basis of popularity, because although popular shows garner more viewers than some of the Emmy winners, their theme songs shared almost no similarities with the Emmy-winning theme songs.

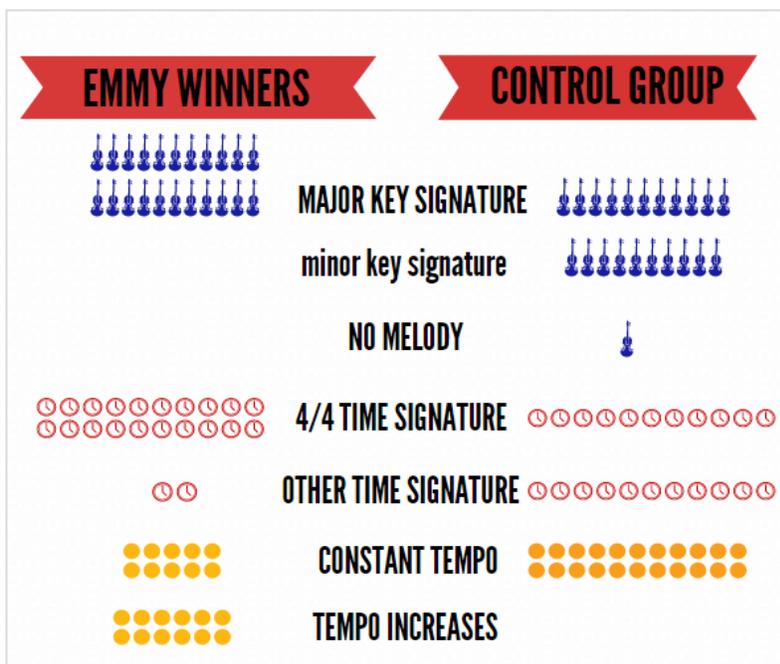
Song	Popular Television Show	Song	Popular Television Show
1	The Office ²⁶	12	Parks and Recreation ³⁷
2	The Newsroom ²⁷	13	Mad Men ³⁸
3	Keeping Up With The Kardashians ²⁸	14	Suits ³⁹
4	Seinfeld ²⁹	15	Scandal ⁴⁰
5	Friends ³⁰	16	New Girl ⁴¹
6	Sherlock ³¹	17	The Big Bang Theory ⁴²
7	Game of Thrones ³²	18	The Mindy Project ⁴³
8	Breaking Bad ³³	19	Bones ⁴⁴
9	Pretty Little Liars ³⁴	20	How I Met Your Mother ⁴⁵
10	Grey’s Anatomy ³⁵	21	Modern Family ⁴⁶
11	Once Upon A Time ³⁶	22	Castle ⁴⁷

Table 3: 22 popular television shows with theme songs serving as the control group.

Before finalizing the data interpretation, I tested confidence intervals to eliminate outliers that significantly skewed the results of my research. Using a confidence level of 95%, I removed the themes for *seaQuest DSV* and *Masters of Horror* from consideration. Eliminating these data points returned the average duration and instrumentation percentages to values that better fit the other data points.

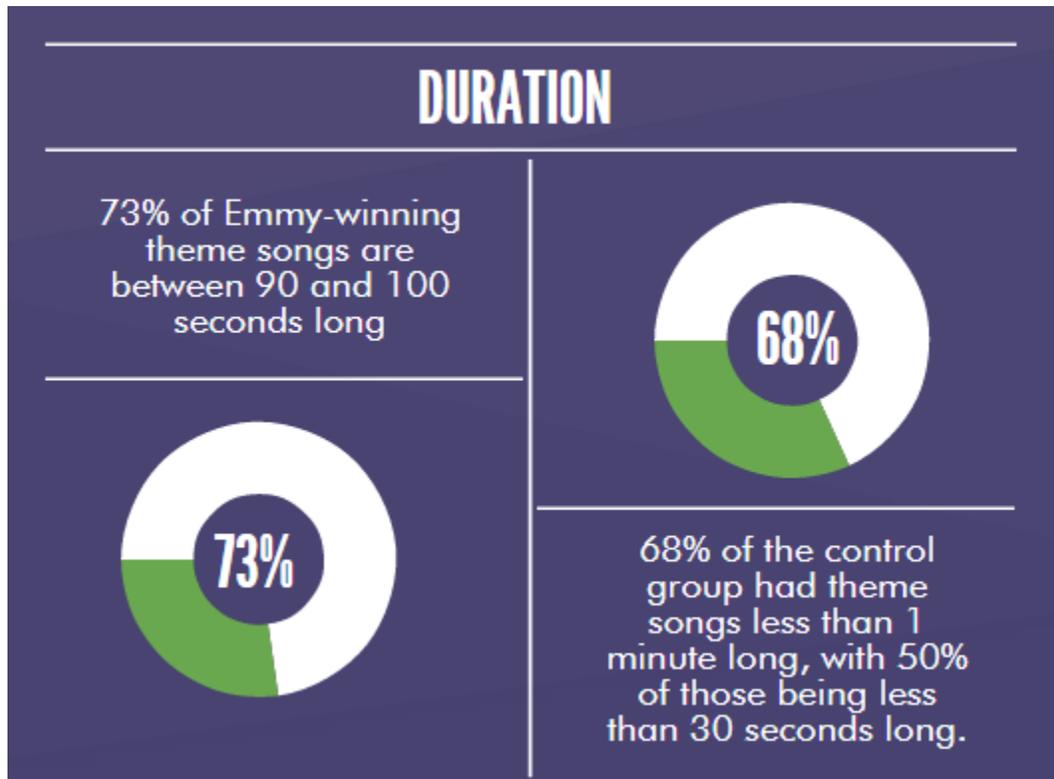
Results

The infographic below shows data for key signature, time signature, and tempo. As illustrated, all the Emmy-winning songs are written in a major key. Of the control group songs, 11 are written in a major key, 10 are written in a minor key, and 1 has no melody. Among the Emmy winners, 20 songs are in 4/4 time and 2 are in another time signature. In comparison, 11 of the control group songs are in 4/4 time and 11 are in another time signature. Finally, 12 Emmy winners have an increasing tempo while all of the control group songs have a constant tempo.



Infographic 1: Data on key signature, time signature, and tempo for Emmy winners and the control group.

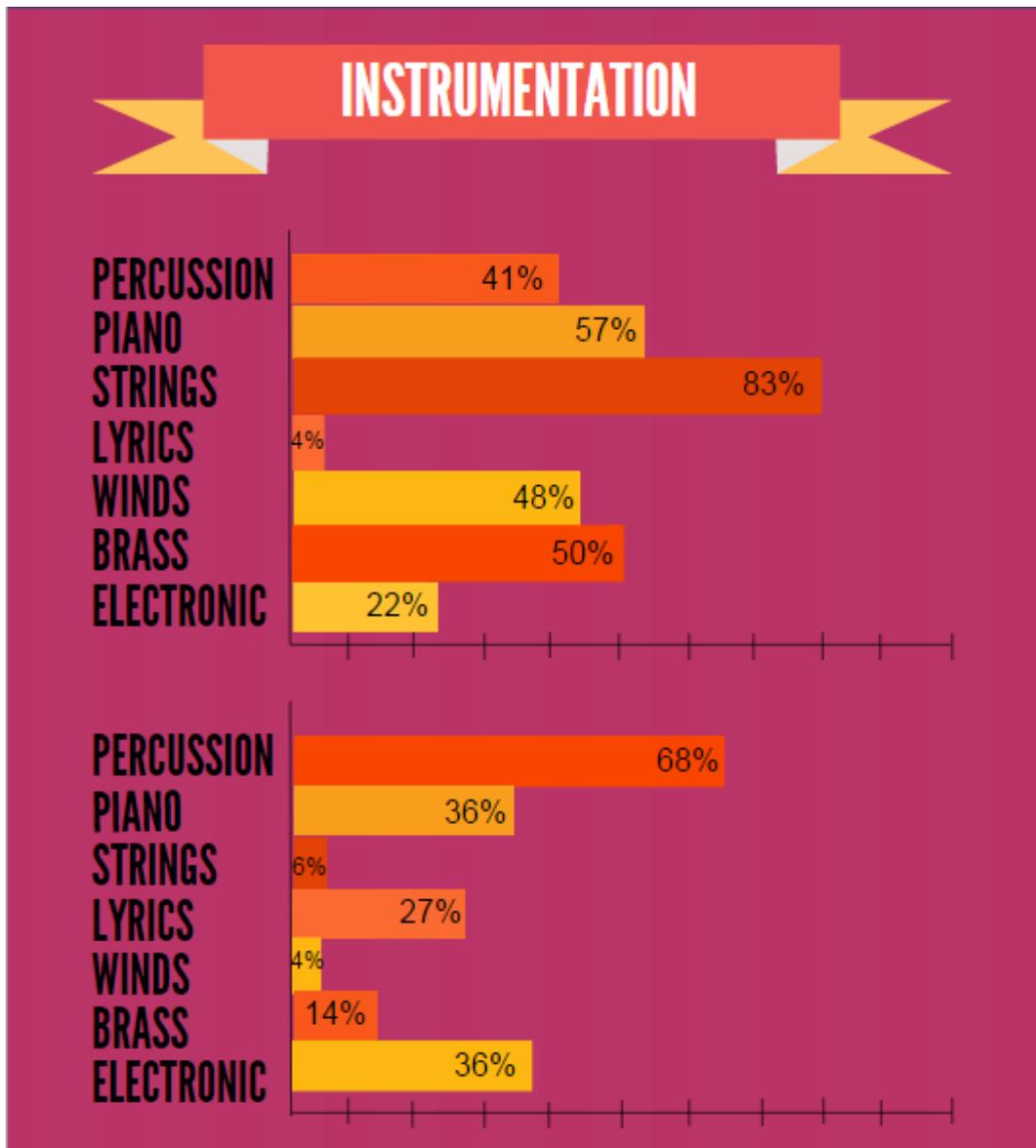
When I considered the theme songs from *seaQuest DSV* and *Masters of Horror*, the average duration of Emmy-winning theme songs was 52 seconds. After testing confidence levels and eliminating these data points from consideration, the average duration of Emmy-winning theme songs became 95 seconds.



Infographic 2: Data on the average duration of Emmy-winning theme songs, in comparison to the average duration of non-Emmy-winning theme songs.

Among Emmy winners, 83% of theme songs feature a string section, the most prominent instruments being cellos and violins. Piano (57%) and the brass section (50%) are the next most popular instrument groups, followed by the wind section (48%) and the percussion instruments (41%). Only 22% of Emmy winners are accompanied by electronic music, and 4% (one song – *Monk's* “It’s a Jungle Out There”) have lyrics.

Among the control group's theme songs, the percussion section (68%) is the most prominent group of instruments. The piano is featured as frequently as electronic music (36%) and 27% of songs have lyrics. The brass section is played in only 14% of control group theme songs, with the strings (6%) and the wind instruments (4%) being played least.

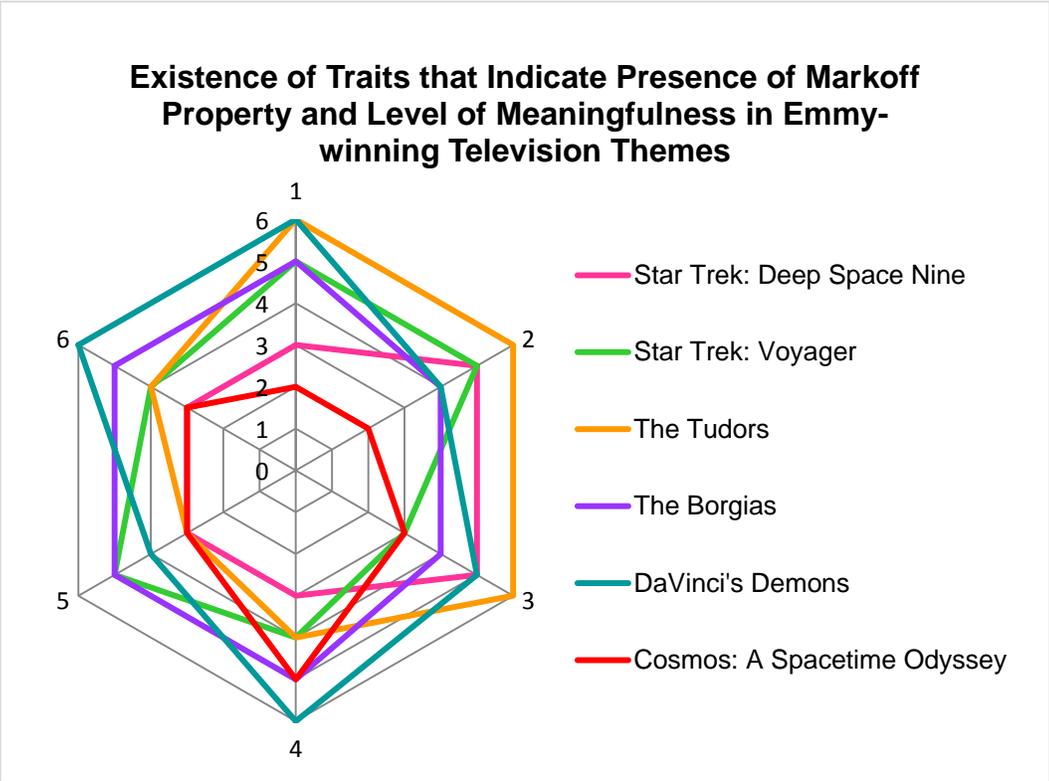


Infographic 3: Data on instrumentation of Emmy-winning theme songs, in comparison to instrumentation of non-Emmy-winning theme songs.

The six Emmy-winning songs that evoked the most common response were studied to discern meaningfulness. The six songs were tested for the presence of six traits, each of which was apparent on a level from “1” to “6.” These conditions made it possible to identify 36 (6 traits x 6 levels) types of meaning from the analyzed works.

Axis #	Information Contained
1	Surprising ending or non-ending
2	Sudden beginning
3	Dissonance or deviation from the melody
4	Melodic elements relevant to the theme of the television show
5	Unique use of instruments
6	Theoretical elements relevant to the theme of the television show

Table 4: Labels for the axes on the radar chart below.



Radar Chart 1: Illustration indicating presence of the Markoff property in the six Emmy-winning theme songs that have the most common emotional effects on listeners.

Trait Level	Appearance of Trait
1	Does not exist
2	Minimally apparent and not unique
3	Somewhat apparent and not unique
4	Somewhat apparent and somewhat unique
5	Obviously apparent and somewhat unique
6	Obviously apparent and completely unique

Table 5: Rubric identifying the level at which traits indicating the presence of the Markoff property are apparent.

As shown by the radar chart, the theme song for *The Tudors* has a sudden beginning, a surprising ending, and dissonance and deviation from the melody, all of which are obviously apparent and completely unique. These qualities are demonstrated when the song begins with the loud sound of a sword being sharpened, which reappears intermittently as a deviation from the melody. The opening melody functions as the background for the rest of the theme, and the piece ends suddenly, with the shrieking sound of metal.

The theme song for *DaVinci's Demons* contains melodic and theoretical elements that are relevant to the theme of the show, both of which are obviously apparent and completely unique. Inspired by Leonardo DaVinci's ability to write backwards, the composer wrote a palindromic melody that functions like one of DaVinci's codes. The theme music, which is also the music for DaVinci's character in the show, sounds the same when it is played backwards. As a result, there are deviations in the melody – where a listener expects a sense of finality, the piece returns to its first note.

None of the theme songs achieved a level 6 for the quality of using an instrument in a unique way. The highest level scored, a 5, was achieved by the theme songs for *The Borgias* and *Star Trek: Voyager*.

The Borgias' theme song was the only Emmy winner to feature a Spanish guitar and chanting. The chanting functioned as background noise, and the Spanish guitar music was a deviation from the main melody. In the theme song for *Star Trek: Voyager*, a shrill shrieking sound punctuates the melody. The noise imitates the sound of radio interference, which mirrors the show's themes on communication.

Cosmos: A Spacetime Odyssey also has a shrill noise underlying the melody. However, while it was somewhat discernable, the sound was not unique to the *Cosmos* theme song because it had previously been used in the *Star Trek: Voyager* theme song.

The table below lists the "meaningfulness level" for each of the songs analyzed on the radar chart. A song that achieved every level of the Markoff property would receive a level 36 on the scale.

Theme Song For	Meaningfulness Level
Star Trek: Deep Space Nine	22
Star Trek: Voyager	26
The Tudors	29
The Borgias	28
DaVinci's Demons	31
Cosmos: A Spacetime Odyssey	18

Table 5: Values for meaningfulness of each theme song that was further analyzed. The highest number of points available was 36 (6 points for all 6 traits).

The highest ranking theme song, and therefore the “most meaningful” and “most beautiful” according to Table 5, is that of *DaVinci’s Demons*. *The Tudors* and *The Borgias* follow closely with levels 29 and 28. *Star Trek: Deep Space Nine* and *Star Trek: Voyager* received levels of 22 and 26. The “least meaningful,” “least beautiful” title theme was that of *Cosmos: A Spacetime Odyssey*, with a meaningfulness level of 18.

Discussion

At the outset of this project, my mentor challenged me to consider three questions:

1. Can music be judged?
2. Is the Emmy for Outstanding Main Title Theme Music awarded subjectively?
3. Does popularity influence a show’s chances of winning the Emmy for its theme music?

My research led me to the following conclusions:

1. Music can be judged, and audiences judge music all the time. We judge music when we turn down the radio because we do not like what is playing, when we tell iTunes radio to “never play a song like this again,” and when we concede that *1989* “is just much better” than Taylor Swift’s previous albums.
2. The data I gathered indicates that the Emmy is awarded objectively. Several composers have been nominated for the Emmy more than once, and if it were a subjective honor, the same composers would receive it every year. Instead, the Emmy is awarded to music that is written in a certain way.
3. The control group for this research proves that popularity does not influence a show’s chances of receiving the Emmy for its theme music.

Conclusions

The results confirm the hypothesis: there is a formulaic approach to writing music that is more likely to win the Emmy for Outstanding Main Title Theme Music. This research reveals that the formula includes the following elements:

1. music written in a Major key,
2. a 4/4 time signature,
3. a duration between 90 and 100 seconds,
4. a quickening pace,
5. lack of lyrics, and
6. a symphonic orchestra with a strong string section.

As shown in Radar Chart 1, none of the songs forms a regular polygon on the graph. This indicates that none of the Emmy-winning theme songs contains every trait of the Markoff property. Consequently, none of the songs perfectly achieves Meyer's definition of meaningfulness. The graph implies that Myhill's theorems hold true: while there is a formula for writing Emmy-winning music, there is not a formula for writing beautiful music.

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