

Creating and Implementing a Feminism Score System for the Top 50 Movies of 2016

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Acknowledgments

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Introduction

In this project, we examine whether a movie can be considered “feminist” and identify gender imbalance behind and in front of the camera. To investigate feminism in the top 50 Hollywood movies of 2016, we developed a way to calculate a movie’s feminist score through a combination of the Bechdel test and Bechdel alternatives, assessing the movie from different lenses of feminism for a more holistic result. The Bechdel test was created by Alison Bechdel, a cartoonist who created it for a comic strip in the mid-1980s. A movie passes this test if it has two named female characters and if they have at least one conversation not related to men. Different tests were created after writers at FiveThirtyEight reached out to women in the film industry for what they thought the next Bechdel Test should be, which is what brought about the Bechdel alternatives that each of the top 50 Hollywood movies of 2016 were tested with (Hickey, et al). Our feminist score is calculated as a weighted score out of 100, depending on a combination of the results of six specific Bechdel-alternative tests.

We decided that the most important and reliable feature in defining a feminist movie is that the content of the movie is concerned with women’s life and growth and that the story centers on women. This feature allows the movie to deepen the audience’s understanding of the female experience and empower women, and thus be considered as truly “feminist”. Accordingly, whether a movie passes the Peirce Test, which considers female protagonists, matters the most regarding our standard of “feminism” and we gave it the highest weight in scoring (Hickey, et al). We also think that the proportion of women working on the movie is a crucial indicator for a feminist movie because having more women in the production team suggests that more female perspectives were involved in its creation, and as such the movie itself has a higher probability of reflecting genuine female experiences (Hickey, et al). But since this factor’s impact is less obvious to casual viewers than that of the movie’s protagonists, we weighed the Rees Davies test (which requires a minimum of 2 women per department) less heavily than the Peirce Test.

Aside from the protagonists, the percentage of supporting female characters in a movie can also increase the chance of the movie’s content being feminist. However, due to the

supporting cast's lower impact on the audience's memory and their lesser importance in movies as a whole, we weighed the Koeze-Dottle test (which requires a supporting cast of at least 50% women) lower at 10% of our total feminist score (Hickey, et al). As for the Bechdel Test, we felt that despite its extremely low requirements to pass, its place in the history of discussing feminism in film and its low entry barrier would help in differentiating movies that likely had no chance of being feminist from those that - while not necessarily being a particularly feminist film - could still pass the minimum requirements. Thus, its weight in our feminist score is also quite low at 10%.

The Ko Test (which considers non-white female characters) is also included in our score as an attempt to include an intersectional element in our system (Hickey, et al). While not a perfectly inclusive score in judging a movie's feminism in an intersectional sense, it does look for whether the movie may include feminist aspects for women who are not white. Ultimately, a movie that does not pass this test may still be considered feminist - for white women, at the very least. As such, we gave it the lowest weight at 5%.

Finally, the Feldman Score is a more holistic test for whether or not a movie is feminist, as it considers a wide variety of factors from the production team to characters in the film (Hickey, et al). Due to its breadth, we gave it a heavier weight of 25%, while keeping it lower than the Peirce test as the factors it considers are also included within the Peirce Test, the Rees-Davies Test, and the Koeze-Dottle test.

Here is the final breakdown of each test's weight in determining our feminist score:

- Peirce Test (30%),
- Feldman Score (25%)
- Rees Davies Test (20%)
- Koeze-Dottle Test (10%)
- Bechdel Test (10%)
- Ko Test (5%)

In choosing the six Bechdel alternative tests that factored into our definition of a feminist movie, we also tried to include one test from every test category described in the *FiveThirtyEight* article (these categories were: behind the camera, intersectional, protagonists, supporting cast) (Hickey, et al). This was once again an effort to take a more holistic approach to our scoring process.

In case of a tie, we decided our first tie-breaker for determining the final ranking of movies would be based on the number of actors. Since several of these tests (Koeze-Dottle, Bechdel, and Ko) have a higher likelihood of being passed if there are more actors, just on account of there being a higher probability of a higher number of female characters (because a greater number of actors could mean an increase in the total number of female characters), movies with more actors were ranked below movies with fewer actors. This is far from a foolproof tie-breaker, but we felt it had enough basis to use it preliminarily. Of course, there is

always the possibility of there being two movies with the same feminist score and the same number of actors, so our final tie-breaker just ranked the movies in alphabetical order.

Method

To reiterate, our definition of a feminist movie depends on a combination of six different Bechdel-alternative tests, calculated as a weighted score out of 100, with passing or failing the Bechdel Test counting for 10%, the Rees Davies Test for 20%, the Ko Test for 5%, the Peirce Test for 30%, the Feldman Score for 25%, and the Koeze-Dottle Test for 10% (this number is calculated using multiple if statements, checking against the specific test results). This feminist score was stored in an instance variable of the Movie class so that each Movie object could be compared to another on the basis of their feminist score. The Movie class implements the Comparable Interface, with our compareTo method comparing the Movies based on their feminist scores. If two movies had the same feminist scores, then the compareTo method would compare their number of actors, with movies with fewer actors being considered “more feminist” than movies with more actors. As a final tie-breaker in case two movies had the same feminist score and the same number of actors, the movie titles are compared lexicographically, with the titles that have letters earlier in the alphabet being “greater” than movies with titles later in the alphabet.

We used a PriorityQueue based on a LinkedMaxHeap, to which we enqueued all the movies in the collection. Enqueuing the Movie objects meant that they were placed in the LinkedMaxHeap according to their feminist score and the tie-breaking elements specified in our Movie compareTo method, with the highest-ranking Movie as the root of the heap. Dequeuing all the Movie objects in our MovieCollection toString() enabled us to print out each Movie object in order from the highest to lowest ranking.

If the available data included information about more movies, our solution might change. For example, if more movies were included that passed the Uphold Test, we might change our definition of a feminist score to reflect that. Our current feminist score does not take into account the Uphold Test, mainly because all 50 of the movies in the data set failed it, and so it wouldn’t have much of an effect on the rankings. However, we think that the test itself is important and a good indicator of a feminist movie as it requires that at least half of a movie crew (which includes directors, cinematographers, etc.) is made up of women, and thus involves many female perspectives in its creation. We could then update our feminist score to depend upon the result of the Uphold Test or other similar tests if the data made them more relevant. However, our code should still work for larger sets of data, as the LinkedList with which MovieCollection is built and LinkedMaxHeap on which our PriorityQueue is based are both able to expand to accommodate more movies.

Conclusions

With the feminist score we created, the highest score possible is 100 points. For this score to be achieved, the movie must have passed each one of the 6 tests we took into consideration.

From our results, it's clear that none of the top 50 movies of 2016 were able to get a full score. The two highest-scoring movies (*Alice Through the Looking Glass* and *Finding Dory*) both scored 85 points, meaning they failed at least two tests, one of those being the Ko Test for both of them. As for the two lowest-scoring movies (*The Jungle Book* and *The Angry Birds Movie*), they both passed only the Ko Test and nothing else. This was an interesting find, considering that the Ko Test is our only test that considers race. It may speak to the design of the Ko Test and whether it can truly be used as a measure of feminism by itself, or it may also speak to our design of our feminist score, and how we gave the Ko Test the lowest weight. While other movies also passed only one test, they are still ranked higher because of those tests' weights, as we determined them to be more important in deciding whether or not a movie is feminist.

On the other hand, it's not surprising that none of these movies received full scores. The lack of positive female representation in movies, and the lack of female staff working on movies is well-documented. In fact, the average score of the movies we ranked being 47.9 seems about par for the course - perhaps even a positive sign, as it means most of the movies are passing multiple tests. Still, with our lowest scores being 5 and our highest scores being 85 and the average being below 50, it's clear that while there are still popular movies that barely hit the bare minimum in terms of feminism, there is a clear lack of movies that are extremely feminist.

As for a new movie feminism test or Bechdel alternative, we could evaluate movies based on the division of speaking time of characters based on gender. A movie could pass if female characters have the same or greater percentage of speaking time compared to male characters. With more dialogue, female characters are more actively involved in the movie and thus more likely to be fully fleshed out characters with a stronger impact on the events of the film. None of the current tests take into account speaking time, despite the fact that it is a pretty objectively measurable variable, so we believe that it would be a helpful test to create (Hickey, et al). It also encompasses all characters in the movie, from leads to supporting characters, so it would be a relatively holistic test of characters, which at the moment is only done by the Bechdel and Feldman tests excluding those based on race and ethnicity.

Our Movie Ranking:

There are 50 movies and 1955 actors in this collection, and it has an average feminist score of 47.9. Ranked in order from most feminist to least feminist they are:

- Alice Through the Looking Glass (23 actors, and a feminist score of 85)
- Finding Dory (28 actors, and a feminist score of 85)
- Independence Day: Resurgence (28 actors, and a feminist score of 80)
- The Girl on the Train (20 actors, and a feminist score of 75)
- The Boss (37 actors, and a feminist score of 75)
- Sing (55 actors, and a feminist score of 75)
- Arrival (60 actors, and a feminist score of 75)
- Ghostbusters (54 actors, and a feminist score of 70)
- The Divergent Series: Allegiant (91 actors, and a feminist score of 70)
- Hidden Figures (96 actors, and a feminist score of 70)
- Sausage Party (33 actors, and a feminist score of 65)

Miss Peregrine's Home for Peculiar Children (53 actors, and a feminist score of 65)
 Suicide Squad (54 actors, and a feminist score of 65)
 Storks (25 actors, and a feminist score of 60)
 Captain America: Civil War (26 actors, and a feminist score of 60)
 Kung Fu Panda 3 (36 actors, and a feminist score of 60)
 Bad Moms (16 actors, and a feminist score of 55)
 Star Trek Beyond (23 actors, and a feminist score of 55)
 Pete's Dragon (41 actors, and a feminist score of 55)
 Boo! A Madea Halloween (42 actors, and a feminist score of 55)
 Don't Breathe (10 actors, and a feminist score of 50)
 Lights Out (14 actors, and a feminist score of 50)
 The Conjuring 2: The Enfield Poltergeist (32 actors, and a feminist score of 50)
 Trolls (32 actors, and a feminist score of 50)
 Jason Bourne (43 actors, and a feminist score of 50)
 La La Land (49 actors, and a feminist score of 50)
 Batman v Superman: Dawn of Justice (122 actors, and a feminist score of 50)
 Moana (7 actors, and a feminist score of 45)
 Ice Age: Collision Course (18 actors, and a feminist score of 45)
 The Purge: Election Year (41 actors, and a feminist score of 45)
 Fantastic Beasts and Where to Find Them (61 actors, and a feminist score of 45)
 10 Cloverfield Lane (10 actors, and a feminist score of 40)
 Passengers (27 actors, and a feminist score of 40)
 Zootopia (32 actors, and a feminist score of 40)
 Rogue One: A Star Wars Story (33 actors, and a feminist score of 40)
 X-Men: Apocalypse (90 actors, and a feminist score of 40)
 Central Intelligence (25 actors, and a feminist score of 35)
 Now You See Me 2 (48 actors, and a feminist score of 35)
 Ride Along 2 (50 actors, and a feminist score of 35)
 The Accountant (58 actors, and a feminist score of 35)
 The Secret Life of Pets (31 actors, and a feminist score of 30)
 The Magnificent Seven (48 actors, and a feminist score of 30)
 The Legend of Tarzan (58 actors, and a feminist score of 30)
 Doctor Strange (29 actors, and a feminist score of 20)
 Hacksaw Ridge (90 actors, and a feminist score of 20)
 Teenage Mutant Ninja Turtles: Out of the Shadows (23 actors, and a feminist score of 10)
 Deadpool (34 actors, and a feminist score of 10)
 Sully (61 actors, and a feminist score of 10)
 The Jungle Book (11 actors, and a feminist score of 5)
 The Angry Birds Movie (47 actors, and a feminist score of 5)

Collaboration

We discussed how the Actor and Movie classes should work, and then Genevieve implemented and tested them according to the specifications of Task 1. Anna and Ada implemented the instance variables and constructor and getter methods in MovieCollection collaboratively. When dividing up the work for Task 2, Ada was mainly responsible for defining the readCasts() method and finding all movies that passed the Bechdel test, Anna was mainly responsible for readMovies() and finding all movies that passed either the Peirce or the Landau test, and Genevieve was mainly responsible for findAllMoviesPassedTestNum() and finding all movies that passed the White test but failed the Rees-Davies test. Anna wrote testing for the MovieCollection class. We discussed together what our definition of a “feminist score” would be, and then Genevieve implemented the corresponding feministScore() method. Ada wrote the

Priority Queue class. We discussed how `compareTo()` would work in the `Movie` class, and then Anna implemented the method along with `rankMovies()`. Genevieve went through the classes and compiled the testing and javadoc. The first draft of the paper was discussed between us, then written mostly by Ada and Anna, with some parts by Genevieve before we each went through and made final edits. For all these steps, we met frequently to go over each other's code, make suggestions for improvement, or edit them directly to the point where they're almost completely different from our first drafts, so in the end we have all contributed significantly to each step.

Works Cited

- Hickey, Walt, et al. "Creating the next Bechdel Test." *FiveThirtyEight*, 21 Dec. 2017,
<https://projects.fivethirtyeight.com/next-bechdel/>.
- Wolfe, Julia, and Dhrumil Mehta. "FiveThirtyEight's Next Bechdel Test Data."
<https://github.com/fivethirtyeight/data/tree/master/next-bechdel>, 17 Oct. 2018.