Abstract

The Department of Defense of the United States of America (DoD) and Hollywood have a long-lasting and gainful relationship. Given that they are leaders in their respective fields, it is of particular interest to understand the collaboration between them. This article investigates 1) What the DoD offers to the film industry and what they get back in return and 2) How does the DoD decide to assist a movie or not. The study uses text mining and analysis on the remarks made by DoD while deciding on the decision to support or not. The results show that Hollywood receives the support of costly and military-related paraphernalia from the top agencies of the DoD and in return sheds good light on DoD in the movies. Simultaneously, DoD cast off the movies that narrated uncomfortable stories about the United States.

1 Introduction

Production and consumption of information - which exists in various forms such as text (including numbers), audio, and video - have become part of everyday lives. One such industry where mass production and consumption happens is the movie industry. People seek entertainment through movies which include films, TV shows and documentaries that cover a wide range of genres and cut across age/gender. Hollywood is one of the largest film industries in the world, and its films receive a global viewership. With time, the production of movies and TV shows has evolved into large businesses and makers trying to bring new experiences to the audiences which result in increased production costs.

The other side of this study deals with the military. Armed forces in any nation are projected to be the highest acts of patriotism. Yet, many individuals are not ready to be enlisted. There could be multiple reasons for it, including the sentiments against war, the negative image of living conditions, and the uncertainty of life. This hesitation produces a major challenge for any nation to maintain a military and resist opposition to spending on the military. Thus, publicity is an important and essential tool for armed forces.

This article looks at the U.S. military, a military powerhouse in the world. The common point that connects the Hollywood and U.S. military is the assistance provided by the latter to the former in the production of films. The assistance ranges from providing shooting permissions at military installations to allowing the filmmakers to use the equipment, personnel across various branches of the military. The outcome of this exchange has been subject to debate. Pentagon ¹ states that their

¹A metonym for U.S. Department of Defense
goal in cooperating with filmmakers is to both “accurately depict military stories and make sure sensitive information is not disclosed”[1][8] whilst researchers argue that Pentagon has influenced makers to modify the scripts to show U.S. military in good light [[11], [9]]. Therefore, examining the relationship between Hollywood and the U.S. Department of Defense (DoD) in the United States of America would explain what they are producing together. The connection between these two vast establishments was studied under two large themes. First, the nature of the relationship between them is analysed, followed by the political impact of DoD on Hollywood.

The next section discusses thematic fields and research questions to be answered. Section 3 describes the data and is followed by Section 4 that is a description of methods used to answer the research questions. The penultimate Section 5 discusses the results and interpretations and followed by the limitations and possible directions to further the research in Section 6 and concluding with Section 7 that reflects the findings.

2 Background and Research Questions

2.1 Military and Entertainment

The armed forces have had a long association with the media industry. Military around the world uses various modes of media to reach out to their citizens. This outreach started with posters and songs for recruitment [3]. As time progressed and with the rise of new media forms, the military has also turned their attention to them. The most important of these are movies/TV shows and video games. While video games were first started to serve the troops with simulations, investments in films were made to directly communicate with the audience [7]. This work focuses on movies as they are widely common and reach a greater number of people.

The relation between the U.S. military and Hollywood dates back to the 20th century. Looking at the history of this relationship provides the base to analyze the nature of tie-ups between these complexes. The collaboration started informally when a filmmaker asked an Air Force general to perform to his camera at an airshow and used it to make the Military Air Scout film [14]. Not until 1924 the army started to provide equipment support to the movies when they saw a patriotic message in the movies [14]. Eventually, the other branches of the military have started supporting the movies and opened individual entertainment liaison offices [15]. During the initial days, the military only saw the opportunity to depict their activities to the audiences. However, this relation eventually grew deep due to the world wars. During the second world war, the U.S. Department of War commissioned the Why We Fight film to justify their participation in the war [13]. Later, the scriptwriters went back to the military as they found many interesting stories circling the war. The next key phase in the relationship began when Mr. Phil Strub became the chief of the DoD media liaison office in which he continued until 2018. He became so influential that accepting or rejecting support for a film was his sole decision and thus exerted influence on the scripts [15]. Under his tenure, DoD issued “Instruction 5410.6” which lays out the requirements to be fulfilled by the script to formalize the process of granting support to the filmmakers [4]. The journey between the military and filmmakers, that started to recreate the war moments later transformed into a new cinema with various other depictions of the military such as fighting extraterrestrial beings ².

²Movies such as Battleship (2012) and Transformers series (2007, 2009 & 2011)
In any movie based on the DoD agencies, the need to recreate military facilities and use of its equipment was key to make the movies more authentic. However, this could result in huge production costs [15]. The need for more stories, an attempt to show realistic imagery together with the need to control production cost could have compelled the producers to approach the military to provide aid.

**Research Question:** Altogether, the relationship is two ways where one entity provides services for the other. This association was analysed by answering, what were the various types of support provided by the DoD? How did the movies that have received and did not receive the support portray the military?

### 2.2 Hollywood and Politics

As mentioned earlier, scholars have stated that the DoD has engaged in a wide-ranging politici
cized campaign of promotion and revisionism through films [11]. They go on to say that DoD has sidelined or changed the politically inconvenient lines in the films/TV shows in order to support the production. David Robb’s Operation Hollywood [11] (as cited in [15]) describes that Mr. Phil Strub often denied support to movies that portray a negative image of the American military. Additionally, the needs of the filmmakers presented the DoD an opportunity to steer changes in script and production [15]. Matthew argues that multiple instances of such events occurred and reported mostly based on anecdotal evidence [9]. A primary reason for such a proceeding is the lack of data. However, now, the (partial) data about the movies and TV shows that were supported and not supported by the DoD is available to the public along with reasons for doing so which provides a way to understand the political effects.

**Research Question:** The political impact on the movies in receiving the assistance was studied by answering, what were the reasons and the political motives of the movie plot in movies that were rejected vis-a-vis the movies that have received support?

### 3 Data

The Military-Hollywood Collaboration Database[2] was used as the primary dataset for this research. The database includes a list of 865 films and TV shows with a status of assistance request along with short remarks from the military. The status of a film or a TV show is defined as the military’s response to the assistance request. There are 5 possible status according to the dataset: APP, DEN, LIM, OTH, RSCH indicating if the movie is approved for assistance, denied assistance, approved for limited assistance, withdrawn the request for assistance, and approved for research assistance respectively. The original data was acquired in a 2017 Freedom of Information Act (FOIA) request to the U.S. Pentagon. Key columns from the resulting PDF were then transcribed in a CSV file. The original dataset was augmented with additional data that helps in answering the research questions. First, the IMDb IDs were added to the entries in the dataset. The movies that were found to be not produced and those films whose titles were ambiguous and did not have clear information were excluded from the analysis. Next, using the IMDbPY Python package and

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3IMDb (an acronym for Internet Movie Database)
the IMDb ID as the key the data about the plot for each film/TV show was obtained. The detailed changes are provided on our Github repository.

3.1 Data Description

This dataset contains 9 columns and their description is given in Table 1. The first 6 rows correspond to the data from the original dataset and remaining are the augmented columns to the original data.

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The title of the film or TV show requesting assistance.</td>
</tr>
<tr>
<td>Subtitle</td>
<td>An alternate name for the film, or the episode title of the TV show.</td>
</tr>
<tr>
<td>Status</td>
<td>The military’s response to the assistance request.</td>
</tr>
<tr>
<td>Media Type</td>
<td>The type of media requesting assistance, a Film or TV show.</td>
</tr>
<tr>
<td>Year</td>
<td>The year that the film or TV episode was released.</td>
</tr>
<tr>
<td>Remarks</td>
<td>The comment made by the military on providing support to the movies.</td>
</tr>
<tr>
<td>Plot</td>
<td>The storyline of the movies as described in IMDb.</td>
</tr>
<tr>
<td>IMDb ID</td>
<td>Unique identifier for a movie defined in IMDb.</td>
</tr>
</tbody>
</table>

Table 1: Dataset Description

3.2 Data Cleaning and Preprocessing

As the data was transcribed from a PDF, a series of cleaning operations were performed to overcome some of the limitations of the dataset. Mainly, the films/TV shows that represent the same entity were merged and a basic spelling correction on the remarks column was performed. The next subsection summarizes the preprocessing performed on the text to handle the unstructured text data and it is followed by a description of data after cleaning and preprocessing.

3.2.1 Text Preprocessing

To apply the text processing methods to the data, the remarks and the plot information of each movie was cleaned. The major steps include replacing the non-alphabetic characters. Lastly, as stop words form a key part of expression they were not removed from the text.

3.2.2 Final Data Description

In the end, there were 783 films and TV shows. Out of the 783 movies, 514 (65.7%) of them are films and 263 (33.6%) were TV media. The distribution of the movies for each status and media type is shown in Figure 1. This study deals with the movies that have APP, DEN or LIM assistance and neglects those with OTH and RSCH status. The only film with RSCH status is the

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4 Github repo for the changes made to the dataset
5 The first 6 descriptions is taken as-is from [2]
6 The detailed changes are provided on the Github repo for the text preprocessing
“U-571” - a submarine-based film. As the script had inaccuracies, DoD decided not to support the movie. However, they provided material to the director to understand life on submarines.

Figure 1: Percentage of Films and TV Shows with Support Status by the U.S. DoD

4 Methods

As the data was primarily composed of text, the methods centred around text mining and text analysis were used.

4.1 Nature of Relationship

4.1.1 Support

Named Entity Recognition (NER) was performed on the remarks made by the DoD while deciding on assistance to the films to identify the types of support provided to the movies. Pre-trained NER model that was available on spaCy [5] was used to obtain the entities relating to FAC (buildings, airports, highways, bridges, etc.), LOC (mountain ranges, bodies of water), GPE (countries, cities, states), ORG (companies, agencies, institutions), and PRODUCT (objects, vehicles, food, etc.) tags. As DoD could provide support in terms of personnel, equipment, and locations, these tags of the NER identify such entries from the text.

4.1.2 Portrayals

As the remarks made by DoD would indicate how the military perceived their portrayal in the movie, the sentiment of those remarks were studied to understand how the DoD decided to provide support or not. This sentiment was compared against the decisions of the DoD to provide or deny assistance. At the same time, to look at the filmmaker’s point of view, the sentiment of
the movie plots was studied. Sentiment analysis on the overall text would be influenced by the number of words in the text that are associated with positive or negative sentiment. To mitigate this effect Aspect Based Sentiment Analysis (ABSA) [12] was performed considering the military, navy, marine, army, war, and air force as the aspects. The choice of the aspects was based on the frequent appearance of these characteristic words/topics in the movies.

4.2 Political Influence

The differences in terms, present in the remarks corpus for the movies that have been assisted and those that were rejected by the DoD were studied to comprehend the influence of politics through DoD on the production of films and TV shows. Scattertext tool [6] which is an interactive HTML plot that helps in finding distinguishing terms in corpora was used.

5 Results & Interpretation

5.1 Nature of Relationship

5.1.1 Support

The NER analysis was performed separately on movies that were approved, denied and given limited assistance. Figures 2 - 4 represent various types of locations discussed in remarks made by DoD. The most important location is mugu, ca/california which had the former U.S. Navy air station. The other major locations are san diego and Hawaii (pearl harbor) where the U.S. has a Marine Corps Recruit Depot and the U.S. Pacific Fleet are stationed respectively. These are followed by charleston air force base and Marine Corps Base Camp at Pendleton. This suggests that one of the key support provided by the DoD are locations to shoot the films. Figure 5 shows various agencies mentioned in the remarks. These are primarily the organisations the filmmakers approached for support. It can be seen that the navy and the army assisted majorly in the films that have received support followed by marines, USMC. The probable reason that the navy and army were approached more frequently could be the heavy cost of creating navy sets and obtaining army stories. Lastly, a library (at Georgetown University) appears where the filmmakers could have availed some material for research or footage. Figure 6 shows the product/object support the filmmakers approached for support or were provided by the DoD. The letters f, c and b occupy a major portion and are followed by black hawk, stryker, uss and mustang. These specify the fighter jets, helicopters, battleships and aircraft carriers of the U.S. military.

The most common GPE entity was Vietnam in the remarks of movies where DoD denied assistance suggesting that DoD was not comfortable providing support to those films. This is discussed further in Section 5.2. While the organisations remained similar to that of approved films, the products were barely mentioned. Lastly, for the films, to which only limited assistance was provided, the locations were California and Pearl Harbor, similar to others. In terms of organisation, the army has given more partial support than the navy. The product that has appeared in these sets of remarks was stock. This indicates that most of the limited support provided by the DoD was in giving the stock footage to the filmmakers (through the Georgetown library) or technical advisory.

7The data, code and the (additional) graphs produced in this work are available in the GitHub repository.
5.1.2 Portrayals

The ABSA was performed on the remarks and plot of the movies that have been either provided or denied support by DoD explicitly. Figure 7 - 8 show an example of the sentiments obtained through ABSA for a movie. A value of 0 represents a neutral sentiment, 1 represents a negative sentiment and 2 represents a positive sentiment. Figure 7 shows that the model predicts a neutral sentiment for 4 out of 6 aspects namely military, air force, war, and marine corps for the plot of the “Coming Home” movie. However, DoD remarks carried negative sentiment in the majority of the aspects and the movie was denied assistance. On the other hand, in Figure 8, it can be seen that the ‘The Hunt for Red October’ movie plot has negative sentiment in all aspects except for war. However, DoD remarks for that film had neutral sentiment for all aspects and a positive aspect for the navy and was assisted.

Figure 7: ABSA Results for a Support Denied Film
Figure 8: ABSA Results for a Support Approved Film

Table 2 presents the result of ABSA on all the films and TV shows where each column represents one aspect and the values are the aggregated sentiment of the text, i.e. plots or remarks across all movies having the same status. The sentiments were aggregated per status by taking the majority of the sentiment of the aspect across all the movies in that status.

<table>
<thead>
<tr>
<th>Assistance</th>
<th>Air Force</th>
<th>Army</th>
<th>Marine Corps</th>
<th>Military</th>
<th>Navy</th>
<th>War</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
<td>Plot</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Approved</td>
<td>Remark</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Denied</td>
<td>Plot</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Denied</td>
<td>Remark</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2: Aspect Based Sentiment Analysis for Movies’ Plots and DoD Remarks of Assistance Approved and Denied movies

The sentiment analysis shows that the movie plots for the assistance approved films were neutral for air force, marine corps and war while a negative sentiment for army, military, and navy aspects. In the case of the assistance denied films, the sentiment is negative for all aspects except for marine corps and war, which was neutral. The sentiments do not show a correlation with assistance decisions. Nevertheless, a clear distinction can be seen in the remarks made by the DoD. The movies that have received support from the DoD have neutral sentiment in all aspects except for the navy, where the sentiment is positive. Showing a clear contrast the sentiment of all aspects are negative (except for war, which is positive) for the movies to which the assistance was denied.

While the limitations of this method are discussed in the last section, it is interesting that the sentiment of the plots does not provide a clear indication. However, this could be directly related to the concise nature of the plot i.e. to convey the storyline rather than the internal mechanics. On the other hand, DoD has access to the full script of the movies and was more informed on the scenes and character. Additionally, DoD was able to suggest changes to the script and this is not captured in the plot information. To sum up, the ABSA shows that the movies that have received assistance portrayed the DoD in a non-negative light whereas those films/TV shows that were critical on the aspects of the DoD did not receive any help.

5.2 Political Influence

This analysis used the Scattertext tool that differentiates terms between two categories of text. In a Scattertext plot, the x and y axes are the dense ranks of the term usage by categories mentioned
Figure 9 shows the Scattertext plot of the remarks for approved and denied films. The approved category is on the y-axis, while the denied category is on the x-axis. The top words in the approved category - approve and approved filming - are trivial. The words one and day point out that the frequent amount of time approved for the shooting was very short. The other frequent word that appeared in the remarks of the approved movies was positive. It indicates that the DoD felt the movie(s) provides a positive image of them and thus have been approved for assistance. Similarly, deny, decline and other contradictory words appear highly in remarks of denied movies, trivially indicating that they were denied. However, the key terms are negative and benefit, indicating that those movies were rejected because the DoD felt they portrayed a negative image of them and it did not benefit the DoD. Other frequent words, inaccurate and unrealistic, shows that another reason for DoD to deny the support is an inaccurate portrayal. The characteristic words that differentiate the two categories are portrayal and depiction. These words convey that the crucial factor in the decision-making process of DoD was trying to get a beneficial representation in the movies.

Apart from the terms mentioned above, vietnam is inclined to the denied side on the top right. Upon looking at the occurrence of the word vietnam in the corpus (Figure 10), it was found that those movies that have celebrated the U.S. military, South Vietnam or the Vietnam war, in general, have been supported and at the same time, those that had anti-war sentiments were denied. The movies based on historical events where the U.S. military either won or has not created strong anti-war sentiments in the U.S. [10] are present in the approved category (world war ii, korean
(war), pearl harbor, german and japanese; these terms are visible in Figure 12) and conversely those movies that are based on situations that were not favourable to the U.S. like vietnam, anti are present in the denied category. This also shows that many of the films that were supported by DoD were based on historical/significant events to the U.S. military.

<table>
<thead>
<tr>
<th>Term</th>
<th>Approved frequency</th>
<th>Denied frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>vietnam</td>
<td>38 per 25,000 terms</td>
<td>104 per 25,000 terms</td>
</tr>
<tr>
<td>change</td>
<td>44 per 25,000 terms</td>
<td>86 per 25,000 terms</td>
</tr>
</tbody>
</table>

**Figure 10:** Occurrence of the term **vietnam** in approved and denied films remarks. The blue label is the title of the film/tv show.

Lastly, the word change appeared in 0.4% and 2.1% of the remarks of the approved and denied films respectively. Looking at the corpus of remarks in conjunction with this word (Figure 11) reveals that the DoD has asked the filmmakers to make the changes to the scripts and they have provided support to those films that have agreed to make the suggested changes which make the script favourable to DoD. Next, we see the term recruiting in between average and frequent near the denied terms. Looking at the corpora indicates that DoD denied the films which they deemed did not help in recruiting and at the same time it approved films that they deemed would help in recruiting.

In comparing the movies of approved and limited approved categories the results for the approved movies and the characteristics terms differentiating the two classes remain similar to that
of comparison of approved with denied movies. For the movies with limited support, the terms *footage, stock footage* were frequent suggesting that these movies were stated under limited support as they were mostly provided with historical footage. Alongside the footage, *technical (advisors) and background* were seen suggesting that technical supervision and location or personnel in the background were provided as part of limited assistance.

A similar analysis was repeated after removing stop words. The results before removing the stop words were maintained and only words that were not visible in earlier plots, but were present, are seen. Figure 12 shows the Scattertext plot of the remarks for approved and denied films after removing the stop words. The word *john wayne* is seen near average frequent terms on the Approved axis. He was a famous American actor popular through the 1920s and until the end of World War II (the golden age of Hollywood) \(^8\). He is one of the top actors that brought heavy box office collections \(^9\) and no film starring him has been rejected for support. This suggests that DoD wanted to send their message through celebrities who represent the personification of American values. The results for the scattertext analysis on remarks for approved and limited support films remained the same even after removing the stop words.

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\(^8\) [https://www.britannica.com/biography/John-Wayne](https://www.britannica.com/biography/John-Wayne)

6 Discussion

6.1 Limitations

While this study reveals the dynamics of the support mechanism, it encounters some practical difficulties. The primary limitation comes from the fact that the data was released by the Pentagon. Thus, there could be movies that have received support but were not listed for political reasons (for example, Zero Dark Thirty: A movie based on the killing of Osama Bin Laden - that was supported by multiple agencies [9]). Then, the data was transcribed into a CSV file from a PDF and thus contained spelling and grammatical errors. The remarks made by the DoD were extensively used in this study. However, they provide a short summary of the conversation between the makers and the DoD. Alongside, the plots of the movie used in Section 4.1.2 are obtained from IMDb while the DoD had access to the complete script. Thus, more grounded results could be obtained by accessing the full scripts and transcripts of communication between makers and the Pentagon. Additionally, the ABSA was performed using models that were trained on restaurant and laptop domains 10. Hence to obtain a coherent sentiment a custom model must be trained on data related to military information.

6.2 Implications and Future Work

The primary aim of producing films is to cater to the audience, and this study did consider the third theme for studying the relationship between the military and Hollywood, which is the effectiveness of military advertising. The questions on that end were, did the audience have a positive feeling about the U.S. military after watching the movies that were approved by DoD and how did it affect the recruitment? The user reviews for movies and recruitment data were key to answer this question. Although the user reviews were available to the movies on IMDb, two major limitations were found. The first is a difficulty to address the time dilation effect, i.e. the user reviews were available from the year 1998 while the movies were available from 1911 and responses to the movie might change across years depending on the environment in the country. The second difficulty arises from the fact that the locations of reviewers on IMDb are not known and thus making it difficult to gauge the effect on the primary intended audience. A future direction of this work that would strengthen the conclusions is to conduct a study that would understand the effects of a movie when it was released by looking at the movie reviews and interviews that appeared in the newspapers and other movie related advertisement media of that time.

The results of this study bring to the discussion two important questions relating to the social implications of the movies produced through such collaborations. Hollywood has become more than an American film industry and audiences around the globe watch the movies it produces. Thus a selective promotion in the popular culture could create fictional narratives of the history and secondary problems on addressing the fictional legacy arise. The second implications that requires further study is how do these films and TV shows affect the children? What role do they play in the process of enlisting themselves into the armed forces?

10 https://github.com/ScalaConsultants/Aspect-Based-Sentiment-Analysis#ready-to-use-models
7 Conclusion

Movies provide a rich medium of communication to large numbers of the general public. Realizing their role in shaping the public’s mind, many businesses use it to present their message. The U.S. Department of Defense was no different and came forward to extend assistance and collaborate with movie-makers. This study analyzed this collaboration both in terms of material and narrative collaborations. Concerning the material support, the Pentagon provided the filmmakers with access to air force/naval/army bases, sophisticated military equipment such as jets, submarines and even persons to operate them. In exchange for this valuable and high-cost material support, the movies have presented the good side of the armed forces. More clearly from the sentiment analysis results, only those movies that portrayed non-negative impressions of the military were extended assistance. This study further revealed how the pentagon is involved in making and promoting only those movies that showcase their victories and help them in recruiting. On the other hand, they have sidelined movies that put a spot on the U.S. government or military and occasionally those that had an unrealistic representation of the military. The words’ accuracy and realism that are mentioned in the DoD directive to provide support give a wide scope for individual interpretation and thus enables Pentagon to apply its understanding of what forms part of correct presentation and selectively support the films.

References


