Analysing the Evolution of Power Dynamics in Game of Thrones based on Character Networks and Dialogue sentiments

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***Abstract*—This research examines the portrayal of power dynamics in the Game of Thrones series through character network analysis and sentiment-based text analysis. The study draws on Foucault's (1982) theory of power to investigate how power relationships evolve over time. Using script data sourced from Kaggle, the study analyzes character interactions and conflicts at both macro (season-level) and micro (dialogue-level) scales. At the micro level, sentiment analysis (VADER), N-grams, and topic modeling are applied to character dialogues to assess emotional tone and thematic focus. At the macro level, character networks are constructed, with conflicts serving as weighted edges, enabling an evaluation of power structures through centrality and modularity metrics. Findings suggest that power dynamics manifest through verbal, physical, and life-threatening conflicts, with dominant characters exhibiting higher network centrality and sentiment fluctuations aligning with key power shifts.**

Keywords—Network Analysis, Character Network, Interaction, Power Dynamics, Game of Thrones, VADER Sentiment Analysis.

I. Introduction

Fiction has long been a vital part of human culture, offering artistic and psychological insights while exploring themes like power, self-discovery, and morality. Power, a central theme in literature, shapes character relationships, conflicts, and leadership structures. Mills (2003) defines power as the ability to impose one's will, while Foucault (1982) sees it as a dynamic interplay where individuals both exert and receive influence. In narratives, power emerges through shifting alliances, dialogue, and conflict, revealing both structural and interpersonal dominance [2].

Game of Thrones provides a rich case study of power struggles through betrayals, alliances, and leadership contests. This study examines power dynamics using character network analysis and sentiment analysis. Networks model relationships through nodes (characters) and weighted edges (interactions), while sentiment analysis—using N-grams, VADER, and topic modeling—reveals tone and influence in dialogue. Unlike previous research, this study quantifies power shifts by integrating network metrics (centrality, modularity) with sentiment trends. To ensure contextual accuracy, interactions were manually classified, with a focus on Season 1 due to time constraints.

Previous studies have explored character networks in *Game of Thrones*, such as Liu (2016) using weighted degree centrality to track narrative shifts and Min (2018) employing sentiment analysis for character influence measurement. This study extends prior work by integrating modularity-based conflict analysis with sentiment trends.

II. Motivation

Game of Thrones captivates audiences with its intricate power struggles, mirroring real-world leadership dynamics. This study is motivated by two key factors:

- Power shifts in *Game of Thrones* resemble real-world leadership and political conflicts. Analyzing these shifts through network and sentiment analysis provides data-driven insights into character influence and power transitions.
- By combining *character networks* with sentiment trends, this study contributes to computational literary analysis, offering a model for future studies on power structures in fictional worlds.

III. Dataset

The dataset comprises dialogue or the entire script data from the television series *Game of Thrones*, capturing character interactions across multiple seasons. Collected from *Kaggle.com*, each entry includes the release date, season and episode number, episode title, character name, and the spoken sentence. This dataset serves as a valuable resource for computational literary studies, providing quantitative insights into the storytelling structure of *Game of Thrones*.

IV. Data Preprocessing

This section discusses the data preprocessing methods used in this research. The downloaded dataset contains only the *Name of the Character* and *dialogue* spoken by them. In order to build a character network, it is necessary to have Speaker, Listener of a particular dialogue with their corresponding house. Listener details are obtained by considering the next row in the dataset and adding it as a new column to the current row.

Based on the interaction, type of interaction is determined (Conversation, Conflict, Order, Fight) and score is assigned (+1/-1). Based on the score, new column "Manual Sentiment" is created with Positive/Negative values. If the interaction type is Conflict, result column is added with values Win / Loss. The episodes are divided into scenes and data is manually updated to retain the real context of each scene. This pre-processed data is used for VADER sentiment analysis. For the topic modelling, steps used for preprocessing are removing digits and stopwords in "English" language, stripping the extra space and lemma creation using WordNetLemmatizer.

For the network analysis, the speaker is considered as source node while the listener is considered as target node and the interaction between them as edges. The signed network graph is created with interaction score as edge weights while conflict network graph is created with aggregated conflicts as edge weights.

V. Analysis and Discussion

In this section, the method used for network and text analysis are discussed since the data pre-processing is completed.

Text Analysis:

First, the entire set of dialogues of Game of Thrones is converted into the corpus.

1. *N-grams:*

The N-Grams technique is used to analyse the impact of the antagonist character, the White Walkers, on other characters in Game of Thrones Season 1. Specifically, it focuses on the frequency and distribution of the famous phrase "Winter is coming!" and its variations in parts of speech, even though the White Walkers themselves do not appear in the season. Fig 1 shows the frequency with which other main characters mention the White Walkers, highlighting how the phrase is used throughout the season. This suggests that the characters express a sense of fear and anticipation, frequently referencing the White Walkers in their dialogue, even when the antagonists are not physically present in the scenes or episodes.

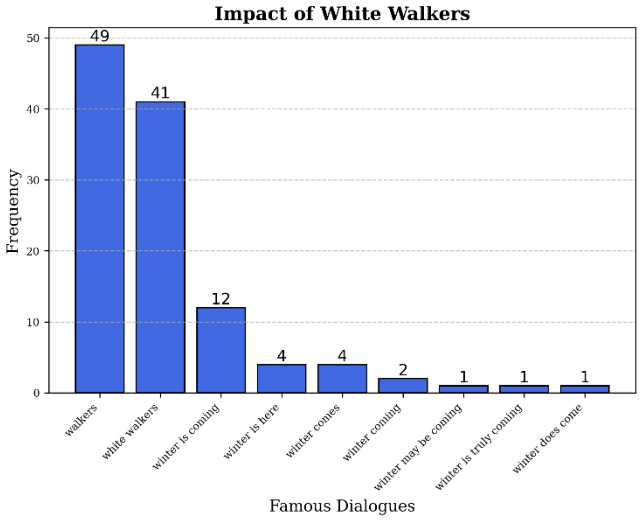

Fig. 1. Frequency Distribution of Famous Dialogues Related to White Walkers in Game of Thrones.

2. *Sentiment Analysis:*

The second method, VADER Sentiment Analysis, identifies the positive (e.g., happy, good) and negative (e.g., sad, bad) sentiments in text. VADER is a lexicon-based sentiment analysis tool optimized for short texts, such as character dialogues. It assigns sentiment scores to words based on their polarity (positive, negative, or neutral) and provides an overall compound score ranging from -1 (most negative) to +1 (most positive).Once the VADER sentiment scores are obtained, they are compared to manually assigned sentiment values based on the nature of the interaction, using a confusion matrix. The classification report showed that VADER achieved an accuracy of 52%, indicating that it struggled with detecting negative sentiments accurately. This was primarily because VADER analyzes the sentiment of sentences based on individual words that express negative emotions, rather than considering the full context of the sentence or interaction. While deep learning models like BERT-based sentiment classifiers could provide more nuanced sentiment detection, VADER was chosen due to its effectiveness on short texts and computational efficiency. Future work will explore deep learning approaches for improved accuracy. As a result, for a more nuanced analysis of character dynamics, manual sentiment data is used rather than VADER, as negative sentiments are crucial for understanding power dynamics in *Game of Thrones*. The Net Sentiment Score (positive sentiment minus negative sentiment) provides a clear view of each character's overall tone in their dialogues. Higher scores indicate more positive sentiment, while lower scores suggest more negative sentiment. Eddard Stark, Tyrion Lannister, and Jon Snow consistently show high positive sentiment scores. These characters are viewed as heroic, moral, or sympathetic, earning significant fan support. Cersei Lannister, Jaime Lannister, and Joffrey Lannister demonstrate more negative sentiment, with some of them showing mixed sentiment due to their complex character arcs.

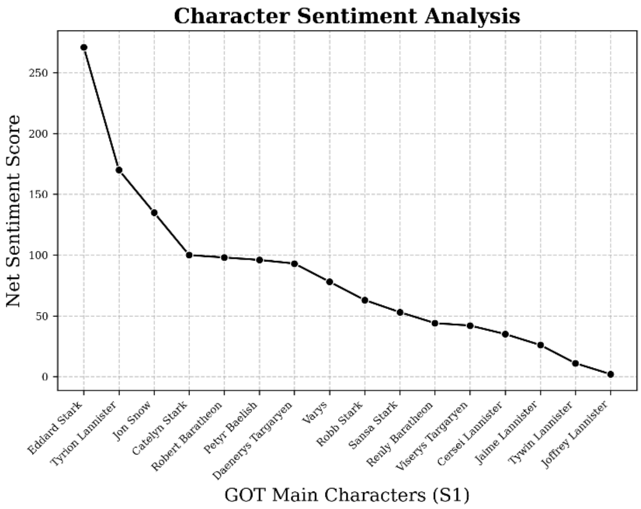

Fig. 2. shows the results of character sentiment analysis in Game of Thrones Season 1

3. *Topic Modelling:*

Topic modelling is a technique used to extract clusters of related keywords from a set of documents, which are then identified as distinct "topics" within the text. This method is typically implemented using matrix factorization, and one popular technique is Non-Negative Matrix Factorization (NNMF). Specifically, NNMF decomposes the word-document TF-IDF matrix M (where M has dimensions $|W|\times|D|$, with $|W|$ representing the words and $|D|$ representing the documents) into two non-negative matrices $|Q|$ and $|H|$, where $|Q|$ has dimensions $|W|\times|T|$ and $|H|$ has dimensions $|T|\times|D|$. Here, T is the number of topics, and we set T=50 for our analysis. The results of the topic modeling are summarized in Table 1. From these results, we can infer the significance of a character or narrative theme based on the keywords that define each topic. A useful way to visualize this is to think of

TABLE I. LIST OF TOPICS

Topic	*Keywords*	*Character/Theme*
0	girl, **targaryen**, woman, dothraki	Daenerys
1	snow, **eddard**, realm, commander	Stark
2	king, **robert**, mad, throne	Mad king
3	fool, dead, **fight**, child	Fight
6	**hair**, wine, sun, lannisters	Lannister
7	**killed**, mother, wrong, fool	Death
8	father, **killed**, war, mad	Death
9	stark, **winterfell**, eddard, bastard	Stark
11	kingdom, **seven**, return, gold	Daenerys
12	war, **joffrey**, queen, bring, head	Lannister
14	night, **watch**, castle, commander	Night Watch
15	throne, winter, **war**, fight	Fight
18	kingdom, child, god, **death**	Death
23	**mother**, dothraki, wife, woman	Daenerys
24	seven, kingdom, **sister**, justice	Lannister
25	mother, **die**, north, matter	Death
26	knight, jaime, **squire**, honor	Honor
27	men, **army**, khal, knight	Fight
31	happy, khal, love, **drogo**	Dothraki
33	khal, drogo, **blood**, whore	Dothraki
34	sister, dragon, **khaleesi**, queen	Daenerys
37	**grace**, command, winterfell, matter	Stark
38	woman, love, honor, **treason**	Stark
39	**wife**, eddard, great, love	Stark
44	life, **death**, blood, dead	Fight
45	**khaleesi**, wrong, save, honor	Daenerys
46	wall, north, walker, **wildlings**	White walker
47	**tywin**, lannisters, pay, gold	Lannister
48	arryn, death, died, **robert**	Mad king
49	sword, day, **joffrey**, bastard	Lannister

Table 1. List of topics for Game of Thrones Season1. Topics found via Non-Negative Matrix Factorization (NNMF). Strongly associated keywords are also listed.

each character as having "tags" or "cards" representing the topics that are most relevant to them. These tags reflect the themes and actions associated with that character, providing insight into their role and evolution in the story. For example, by examining the distribution of topics across characters, we can understand their leadership qualities, key interactions, and how their influence evolves throughout the series. This helps us better grasp the power dynamics between characters, as those with leadership traits often have topics associated with key themes like 'war', 'honor' or 'rule'.

Network Analysis

At this stage, the characters and their interactions have been identified, and the final step involves constructing the character interaction network. This requires two key methodological choices: defining nodes and edges.

*Nodes***:** As seen in prior literature, main characters are represented as individual nodes.

*Edges***:** The definition of edges varies among different studies. Several key factors must be considered when modeling interactions as edges in a network: Laterality (whether interactions are one-sided or mutual), Score (the intensity or frequency of interaction), Polarity (whether the interaction is friendly or hostile), Temporality (how interactions evolve over time). To quantify the intensity of interactions, edge weights are assigned, with signed networks being used to differentiate between positive (friendly) and negative (hostile) relationships.

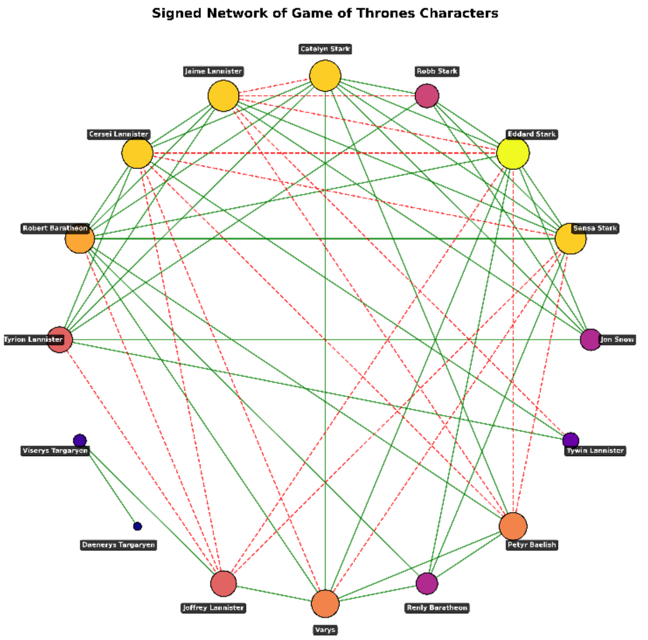

Fig. 3. Signed character network for *Game of Thrones* Season 1, with negative interactions (red edges) and positive interactions (green edges). Eddard Stark's centrality and heavy conflict ties to the Lannisters illustrate his political downfall.

To determine the most influential characters, various centrality metrics were computed, including:

- *Degree Centrality:* Measures how many connections a character has.
- *Closeness Centrality*: Reflects how easily a character can reach others in the network.
- *Eigenvector Centrality*: Indicates a character's influence based on their connections to other influential characters.

TABLE 2 : CENTRALITY METRICS

Characters	*Degree Centrality*	*Eigenvector Centrality*	*Closeness Centrality*
Eddard	**0.7333**	**0.351**	**0.75**
Sansa	0.6667	0.3334	0.7143
Catelyn	0.6667	0.3289	0.6522
Cersei	0.6667	0.3235	0.7143
Robert	0.6667	0.312	0.6818

Table. 2. Centrality metrics of Signed Network Graph

Across all these measures, Eddard Stark consistently ranked as the most central character, confirming his dominant narrative role in Season 1.

To analyze the evolution of power struggles, interactions classified as conflicts were extracted, aggregated and grouped together using Modularity. These conflict interactions were then weighted and visualized as a Conflict Network Graph using Gephi software. The results, shown in Fig 4, indicate that the highest number of conflicts occurred between Eddard Stark and Cersei Lannister. This power struggle culminated in Joffrey Lannister executing Eddard, following the influence of his mother, Cersei Lannister. Thus, the conflict network analysis reveals that throughout Season 1, a significant power struggle emerged between House Stark and House Lannister. By the end of the season, House Lannister gained dominance through the strategic elimination of Eddard Stark, the leader of House Stark.

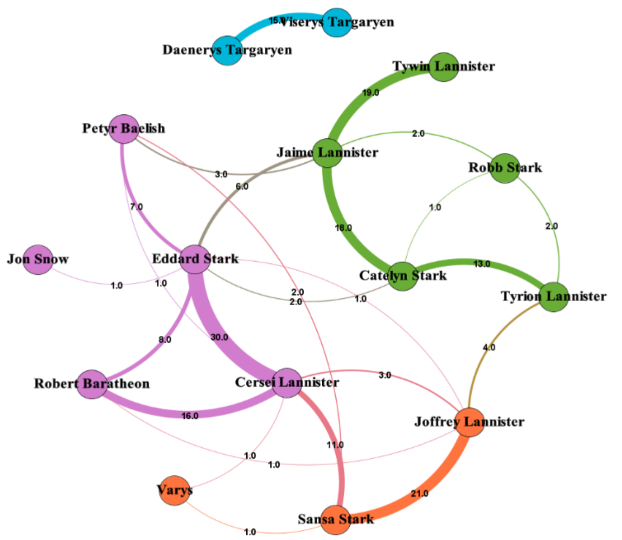

Fig. 4. Conflict character network reveals that highest number of conflicts occurred (30) between Eddard Stark and Cersei Lannister in Season1 Game of Thrones .

VI. Conclusion and Future Work

This study used network and sentiment analysis to examine power dynamics in *Game of Thrones* Season 1. A signed character network highlighted Eddard Stark as the most influential figure, while conflict analysis revealed the power struggle between House Stark and House Lannister, culminating in Eddard's execution and a shift in dominance toward the Lannisters.

Sentiment analysis with VADER and manual annotation showed that characters like Eddard Stark, Jon Snow and Tyrion had predominantly positive sentiment, while Cersei and Joffrey exhibited more negative sentiment, reinforcing their roles. Combining network and sentiment analysis demonstrated how computational methods uncover narrative structures and power shifts. Future work will focus on tracking power shifts over multiple seasons, applying machine learning techniques such as Random Forest classifiers for predictive modeling and BERT-based NLP models for sentiment trends. Additionally, interactive network visualizations in Gephi could improve interpretability of evolving alliances.

VII. Applications

This framework applies to political leadership by analyzing speech patterns, sentiment trends, and interaction networks. It can track influence, predict elections, model alliances, and forecast policy support based on sentiment shifts in discourse.

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