Analyzing Time, Location and Sentiment in Maya Angelou's "I Know Why the Caged Bird Sings" through Natural Language Processing

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Abstract: Maya Angelou's "I Know Why the Caged Bird Sings" stands as a landmark work in American literature, offering a poignant portrayal of resilience, identity, and the human spirit. In this paper, we employ Natural Language Processing (NLP) techniques to analyze Angelou's autobiographical narrative in terms of its temporal structure, location and sentiment distribution. Through computational analysis, we uncover patterns in the sequencing of events and the portrayal of emotions within the text, shedding light on the temporal progression and emotional undercurrents of Angelou's memoir. Our methodology encompasses text preprocessing, temporal analysis, sentiment analysis, statistical analysis, and interdisciplinary interpretation, facilitating a comprehensive exploration of "I Know Why the Caged Bird Sings" that integrates computational insights with traditional literary analysis. By bridging the gap between quantitative analysis and qualitative interpretation, our study offers a nuanced understanding of Angelou's seminal work and its enduring significance in the literary landscape.

Keywords: Maya Angelou, autobiography, Caged Bird, natural language processing, temporal references, spatial locations, sentiment analysis, word associations, autobiographical narratives

1. INTRODUCTION

Maya Angelou's "I Know Why the Caged Bird Sings" stands as a seminal work in American literature, offering a poignant and powerful narrative of resilience, identity, and the human spirit. Published in 1969, this autobiography chronicles Angelou's early life, from her tumultuous childhood in the Jim Crow South to her adolescence and coming-of-age experiences. Through her vivid prose and unflinching honesty, Angelou invites readers into the depths of her personal journey, navigating the complexities of race, trauma, and self-discovery.

Her first Autobiography involves a progression from anger and resentment to subtle confrontation to a vigorous demonstration. This progression offers Caged Bird a thematic unity that contradicts the episodic structure of the narrative. To claim thematic unity is to suggest that form and content work together, a statement that is an aversion to contemporary literary theory. Nevertheless, the formal in Caged Bird is the vehicle of the political messages she wants to pass. The structure of the narrative encompasses episodes that are created much like short stories, and their organization throughout the Autobiography does not at all times include a strict chronological order. Nonetheless, an Autobiography has not to be necessarily chronological, but an anticipation of chronological order from the reader's part is normal, therefore Caged Bird includes this element and in the very beginning the narrative starts with earliest memories such as with the scene where the 'powhitetrash' girls insult Maya's grandmother (Wall, 2014, p. 7).

The 'Caged Bird' was investigated by Emmanuel, (2017) as well, to identify the psychodynamic processes present in the Autobiography . According to the researcher the nuclear family's concern at mentoring the child is optimal. In 'Caged Bird ' , Angelou was banished and alienated from the parents during her pre-Oedipal periods. Therefore, as the child did not detach in a successful way from her crucial unity with the parents, they were not originally able to shape self-boundaries and proper mental representations. Thus, Maya in 'Caged Bird ', turn out to be cold, detached and discouraged. She, as a result, came across various challenges in her new

environment. Maya's normal drive for a father-figure, at the stage of Oedipus complex traps her into the hands of Mr. Freeman who at last rapes her. The ego forces her to escape from the early relationship with her father that forced her to overcome her delicate self-boundaries. The protagonist was controlled by her id as she desired matters that never fully pleased her cravings. It's worth mentioning that Maya's wish for sexual intercourse with an adolescent boy leads to a teenage pregnancy. Lastly, she was ruled by her superego and guided by Momma and Aunty Ifeoma who helped her pass into adulthood, forming a successful gender identity while taking responsibility for her actions within society. Furthermore, the family unit which is the core of human relationships should be protected carefully to transcend divorce and violent behaviors, in other words, it contributes to protect the future generations from the creepy and disturbing situations with the aim to help children grow up peacefully and harmoniously (Traylor, 2014, p. 2).

Angelou as a Black woman and a writer who differentiates herself by infiltrating her artistic work with steady cultural awareness, and individual and racial experience. Her verse discloses subjects related to the survival, growth and self-consciousness of African American people. Angelou appears to uncover the critical consequences associated with the hegemony of the White Anglo-Saxon Protestant culture which had been exploiting and excluding the African American people. Angelou intensely wants to challenge the twofold antagonism of the leading and subaltern cultures and restructure the social order. She tries to redefine Blackness and eulogize the acceptance of Black people. Angelou inspires African American people to take over their African traditional heritage and support their Black self (Du, 2014, p. 66). Nonetheless, a study by Sunday & Ekpo, (2018, p. 45), reveals that although African American women suffered immensely as a consequence of their unprivileged position related to race and gender, their pliability at copying and resisting remained intact. The way Maya employs imagery and symbolism in her literary work creates an exceptional and loudmouthed linguistic ethos of African American women. Possibly Angelou's ultimate impact is associated with the fact that she combines history with poetry. Angelou's concentration lied on filling the 'most dull, most ordinary' with the historical past and its figurative

reflections in her poetry (Tucker, 2014, p. 92, Koyana & Gray, 2007, p. 3).

Her Autobiographies uncovered subjects that were hidden. In her Autobiographies, the protagonist's emotional state was as central to the narrative as the events it included (Neubauer, 1983, p. 126). There was no Autobiography of a Black woman before the publishing of Caged Bird which exposed as much of its writer's inner life and experience. Angelou's uprightness paved the emotive link between the author itself and the readers. In the following volumes of her Autobiography, readers follow Angelou on her wandering across the world (Wall, 2014, p.4).

In recent years, the application of Natural Language Processing (NLP) techniques has opened new avenues for the analysis of literary texts, offering insights into their temporal and emotional dimensions. In this paper, we embark on a journey to explore "I Know Why the Caged Bird Sings" through the lens of NLP, examining its temporal structure and sentiment distribution. By harnessing computational tools alongside traditional literary analysis, we seek to uncover deeper layers of meaning within Angelou's autobiography, shedding light on the interplay between time, emotion, and narrative in her compelling tale.

Our study is motivated by the recognition of "I Know Why the Caged Bird Sings" as not only a literary masterpiece but also a cultural artifact of profound significance. Through our analysis, we aim to enrich our understanding of Angelou's narrative techniques, while also contributing to broader conversations about the role of NLP in literary scholarship. By bridging the gap between computational methods and humanistic inquiry, we hope to illuminate the timeless themes and enduring impact of Angelou's seminal work.

In the following sections, we will first provide an overview of Maya Angelou's life and the historical context surrounding the publication of "I Know Why the Caged Bird Sings." We will then delve into our NLP-based analysis, exploring the temporal dynamics and sentiment distribution within the text. Through this interdisciplinary approach, we aim to offer fresh insights into Angelou's autobiography and its enduring resonance in the literary landscape.

2. AIM OF THE STUDY

The aim of this study is to employ Natural Language Processing (NLP) techniques to analyze Maya Angelou's "I Know Why the Caged Bird Sings" in terms of its temporal structure and sentiment distribution. By leveraging computational tools, we seek to uncover patterns and insights within the text that shed light on the narrative's temporal progression and emotional undercurrents (Jacobs, 2019, p. 5). Through this analysis, we aim to deepen our understanding of Angelou's autobiographical work, elucidating the interplay between time, sentiment, and storytelling in shaping the reader's experience.

3. METHODOLOGY

Text Preprocessing: We will begin by preprocessing the text of "I Know Why the Caged Bird Sings" to remove noise, tokenize the text into individual words or sentences, and perform tasks such as lemmatization and part-of-speech tagging to enhance the accuracy of subsequent analyses.

Temporal Analysis: To examine the temporal structure of the narrative, we will employ techniques such as named entity recognition (NER) to identify temporal references such as dates, ages, and specific time periods mentioned throughout the text. We will then analyze the distribution of these temporal markers to discern patterns in the sequencing of events and the passage of time within the autobiography.

Spatial analysis in the context of Maya Angelou's autobiography "Caged Bird" involves examining the locations mentioned throughout the narrative and understanding their significance in shaping the author's experiences. Methodologically, this involves identifying spatial references such as specific places (e.g., Stamps, Arkansas), regions (e.g., the South), and directions (e.g., North, South).

Word association techniques aid in extracting spatial information by analyzing terms closely linked to locations, such as names of cities, states, or geographical features. Through spatial and temporal analysis, researchers can trace the author's journey, understand the impact of different environments on her life, and explore themes related to identity, belonging, and cultural heritage.

Sentiment Analysis: For sentiment analysis, we will utilize NLP tools to assess the emotional tone of the text. This may involve techniques such as sentiment polarity analysis, where each sentence or paragraph is assigned a sentiment score indicating its positive, negative, or neutral orientation. We will also explore more nuanced approaches to sentiment analysis, such as aspect-based sentiment analysis, to identify specific emotions expressed within the text and analyze how they evolve over the course of the narrative (Balyan, McCarthy & McNamara, 2017, p. 245.

By combining computational methods with literary interpretation, our methodology seeks to bridge the gap between quantitative analysis and qualitative interpretation, providing a comprehensive exploration of the temporal and emotional dimensions of Angelou's seminal autobiography.

4. RESULTS & DISCUSSION

The temporal references in the first chapter include various time indicators such as "May," "the next day," "Years later," "some twenty-five years," "the century," "a few years," "the years," "Saturdays," "the picking season," "this New Day," "this day," "today," "the day," "later years," "day," "another day," "the whole year," and "three months." These references provide a timeline of events and experiences described in the chapter.

The locations mentioned include "North," "South," and "United States," indicating the geographical settings within which the events unfold. Words associated with time include "ve," "last," "Years," "early," "day," "whole," "later," "another," "too," "Saturdays," "hours," "year," "months," "morning," "o'clock," "few," "century," "today," "years," "May," "a," "picking," "this," "next," "all," "noon," "twenty-," "season," "New," "three," "night," "Day," "some," and "four." These words reflect the passage of time and temporal context throughout the chapter.

Words associated with space include "Arkansas," "North," "Beach," "United," "Stamps," "South," "States," "Long," "Arizona," "Blacks," "California," and "the." These words denote various locations mentioned in the narrative, contributing to the spatial context of the events described.

The sentiment score for the chapter is 0.018, which suggests a slightly positive sentiment overall. However, it's essential to consider the context and specific passages within the chapter to fully understand the emotional tone and themes conveyed.

The temporal references in the first chapter provide a sense of chronology, allowing readers to understand the sequence of events and the passage of time. For instance, phrases like "Years later" and "the whole year" indicate time spans, while specific mentions of days and months add granularity to the timeline. Locations mentioned in the chapter, such as "North," "South," and "United States," contribute to the geographical context of the narrative, highlighting the diverse settings within which the events unfold. Words associated with time, like "day," "years," and "months," emphasize temporal aspects, while words associated with space, such as "Arkansas," "California," and "Stamps," provide spatial context, grounding the narrative in specific places.

The sentiment score of 0.018 suggests a slightly positive overall sentiment in the chapter. This indicates that while there may be challenges or conflicts described, there are also elements of positivity or resilience present in the narrative. However, it's essential to delve into specific passages to understand the emotional nuances and themes conveyed throughout the chapter fully (Traylor, 2014, p.8).

The temporal references in the 14th Chapter of the "Caged Bird" span various intervals, reflecting the passage of time and the evolution of experiences. They provide a timeline for the events and circumstances described in Maya Angelou's autobiography, offering insights into her life journey. For example, phrases like "the year before" and "less than a year" indicate specific time frames, highlighting moments of significance or change in Angelou's life. These references serve to structure the narrative and help readers understand the sequence of events (Wall, 2014, p. 6).

Locations mentioned in this chapter range from specific places like "Bailey," "the Mississippi River," and "St. Louis" to broader regions such as "North" and "South." These locations hold significance in Angelou's story, representing different stages of her life, as well as the cultural and geographical landscapes she navigated.

Words associated with time, such as "before," "year," "months," and "winter," contribute to the temporal dimension of the narrative, marking transitions and durations. Meanwhile, words associated with space, like "South," "North," and "the Mississippi River,"

provide geographical context, grounding the story in tangible settings.

The sentiment score of 0.081 indicates a slightly positive overall sentiment in this excerpt. While there may be references to challenges or difficulties, the overall tone appears to be neutral or leaning slightly towards the positive side. This sentiment reflects the resilience and strength that Angelou demonstrates throughout her autobiography, despite the obstacles she faces.

In the last Chapter of Maya Angelou's autobiography "Caged Bird," the temporal references provide insights into the passage of time and the sequence of events in her life. These references include phrases like "eons," suggesting an indefinite, vast period, and "three months," indicating a specific timeframe. Additionally, phrases such as "Some years before" and "only years later" denote events occurring at various points in the past relative to the narrative. The mention of "weeks" and "months" further delineates shorter durations within Angelou's experiences. Moreover, specific dates or events, like "V-Day," mark significant moments in her life journey.

Regarding locations, the text mentions "South America," indicating a geographical reference to a specific region. These spatial references contextualize Angelou's experiences and provide insight into where certain events take place within her narrative.

The word associations in the text reflect the thematic elements and recurring motifs present in Maya Angelou's autobiography "Caged Bird." Words associated with time include terms like "sixth," "evening," "eight," "minutes," "later," "eons," "days," "hours," "weeks," "years," "before," "old," "week," "or," "next," "only," "month," "my," "fourth," "three," "one," "night," "Some," "Day," "Two," "four," and "the." These words collectively evoke a sense of temporal progression, marking specific moments, durations, and sequences within Angelou's life story.

On the other hand, words associated with space include "South," "America," "Mornings," "Alaska," "San," and "Francisco." These spatial references provide context for the settings and locations where various events unfold in Angelou's narrative, grounding the reader in the physical environment and geographical landscapes that shape her experiences.

Together, these word associations contribute to the rich tapestry of Angelou's autobiography, weaving together the threads of time and space to create a vivid

portrayal of her life journey and the environments in which it unfolds.

5. CONCLUSION

The analysis of Maya Angelou's autobiography "Caged Bird" using natural language processing (NLP) methodology reveals significant insights into the temporal, spatial, and emotional dimensions of her narrative. Through the identification of temporal references, such as specific time frames and durations, we gain a deeper understanding of the chronological progression of events in Angelou's life. Similarly, the recognition of spatial locations allows us to contextualize her experiences within the physical environments she inhabits, from the rural landscapes of Stamps, Arkansas, to the urban settings of San Francisco.

Furthermore, the assessment of sentiment polarity provides valuable insights into the emotional undertones of Angelou's storytelling, word associations shed light on recurring themes, motifs, and linguistic patterns within the text, elucidating the underlying motifs and narrative threads that weave together Angelou's compelling story.

Overall, the application of NLP methodology offers a powerful tool for uncovering the multifaceted dimensions of autobiographical narratives, enabling researchers to explore the interplay between time, space, emotion, and language in shaping personal experiences and identities. By leveraging computational techniques to analyze large volumes of text, scholars can gain new perspectives on autobiographical literature, enriching our understanding of individual lives and the socio-cultural contexts in which they unfold.

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