



The Role of Natural Language Processing Techniques in Linguistic Analysis of Nadia Hashimi's 'The Sky at Our Feet' Based on Speech Acts Theory

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Abstract:

*This paper aims to investigate the role of Natural Language Processing in the linguistic analysis of Nadia Hashimi's *The Sky at Our Feet* based on Speech Act Theory as its primary analytical approach. Through an integrated approach that combines Natural Language Processing (NLP) techniques with Speech Act Theory (SAT), the analysis employs basic conceptual NLP-informed techniques within an NLP-informed qualitative analytical framework to distantly read textual patterns, apply sentence segmentation, and function modelling. Extracting and classifying lexicogrammatical patterns, sentence types, and discursive features is a process carried out with a focus on dialogue-oriented narrative segments, which then adopt a pragmatic typology of utterances based on Searle's (1969) classifications of speech acts. Text Segmentation, Utterance Identification, and Pragmatic Classification are guided by humans rather than computational applications. Methodologically, the study employs NLP techniques as a supplementary analytical aid, relying on them while ensuring that human judgment remains the unchallenged essential element in literary pragmatics. From a linguistic perspective, the study shows that core NLP procedures can be applied without the need for computational tools. It facilitates speech act careers in interpreting utterances within specific contexts, through conceptual rather than computationally NLP-performed processing, which can be applied in literary linguistic investigations. The findings expose that conceptual human-centred NLP approaches effectively support pragmatic analysis and suggest that the use of NLP tools alongside pragmatic theory (SAT) enables systematic analysis of literary texts in natural language while preserving their interpretive depth within a literary framework.*

Keywords: Natural Language Processing, Speech Act Theory, Linguistic Analysis of Fiction, Literary Discourse, Human-Centred, Conceptual NLP-Informed Pragmatic Framework.

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Introduction

possibility of developing technology that could understand and generate human language. Natural Language Processing (NLP) is the field concerned with developing technology for sophisticated computational processing of text [1]. Since NLP emerged in the 1950s, recent developments in Natural Language Processing (NLP) have opened new possibilities for systematic

linguistic analysis of literary texts. Natural Language Processing (NLP) has evolved considerably in recent years and has revolutionised how we process and analyse textual information [2]. Computer science and the humanities encounter a significant transformation through the intersection of NLP and the literary arts. As NLP technology continues to advance, it promises to reshape the way humans interact with computers and each other

through language [3]. While NLP tools support interpretive and pedagogical engagement with literature [4], NLP tools have traditionally been associated with technical or computational domains. NLP has a broad range of practical applications across various domains, one of which is linguistics, such as text segmentation, tokenisation, text analysis, text summarisation, machine translation and virtual assistants, etc. With the NLP supportive tools, linguistic analysis is a powerful tool for understanding and appreciating literary forms [5]. Linguistic constructs, which include literary narratives, shape meaning through the choices of vocabulary, structure, and interactional patterns that play a vital role in revealing character intentions, social relationships, and narrative tension. Since words function as symbols to denote concepts, whereas concepts represent collective understandings that are shaped by their use in society [6]. Dialogue, from the other side, plays a crucial role in exploring the speech situation intended as well. In this study, some NLP techniques are utilised in accordance with an analytical approach, SAT, in a conceptual NLP-informed pragmatic framework, through which core NLP procedures are applied in human-centred Linguistic processing. The analysis is conducted through systematic distant reading by the researcher. Text Segmentation, Text Extraction, Utterance Identification, and Pragmatic Classification are guided by humans rather than computational automation.

Nadia Hashimi's *The Sky at Our Feet* (2018), as a young adult fiction, centres on the experiences of Afghan refugee children navigating danger and displacement and relies heavily on dialogue to convey urgency, fear, authority, and solidarity. Through the lens of Speech Act Theory, these dialogic exchanges provide fertile ground for pragmatic analysis, which, based on Searle's typology, investigates assertives, commissives,

expressives, directives, and declaratives illocutionary acts. This paper argues that NLP tools can be effectively integrated with Speech Act Theory to support pragmatic analysis of narrative dialogue. The study aims to demonstrate the role of basic NLP tools that can assist in identifying linguistic patterns in *The Sky at Our Feet*, which are then interpreted pragmatically using SAT. Speech Act Theory examines the pragmatic meaning of utterances through their use in specific communicative contexts, where meaning is not derived solely from linguistic structure but from the function the utterance performs within the situation. Rather than replacing interpretive reading, NLP provides empirical linguistic evidence that enhances methodological transparency and analytical rigour

Literature Review

The field of Natural Language Processing (NLP) has rapidly evolved; previous studies and scholars provided a well-established background about the effectiveness of NLP and corpus-based tools in assisting the analysis of literature. Mahlberg, M., 2007 and Culperper, 2009, and others have proven the mutual relationships between NLP and linguistic analysis. "Corpus Stylistics: Bridging the Gap between Linguistic and Literary Studies", a study by Mahlberg, where he employed corpus linguistics and Linguistic Theory. In this study, NLP tools are used as supportive tools for literary interpretation. "Keyness and Character Talk in Literary Text" is a study by Culpeper, J. 2009, published in the International Journal of Corpus Linguistics. It analyses the conversations and characters linguistically. It also links the language with authority and relationships in the literary texts. Archer, D., Culpeper, J. & Davis, M. (2008), in the book "Pragmatics: An Advanced Resource Book for Students", highlight the corpus-assisted value of

pragmatics concepts in addition to emerging pragmatics and the linguistic tools. Moreover, a study by McIntyre, D. and Walker, B. (2019) explores "Corpus Stylistics: Theory and Practice" in the actual application of narratives and contextual interactions. These studies expose basic NLP tools to support Speech Act analysis of narrative dialogues. The study "Application of NLP in Computational Poetics and Literary Analysis" [4] uses keyword analysis along with other methods. The study employs "topic modelling" to analyse literary texts, a technique that dissects conversation and extracts narratives. Literary analysis and natural language processing require the amalgamation of theoretical and technical frameworks. Searle and Derrida, two philosophers of language, don't like the idea that language can be made into a form that computers can understand. This problem is what causes NLP's emergence. This is about literary studies, but when linguistic theory (like SAT) is involved, the situation changes.

Emergence of NLP In Linguistic Analysis of Literary Texts

Natural Language Processing refers to a set of computational techniques designed to analyse and process human language. In literary linguistics, NLP has been employed primarily for lexical analysis, stylistic profiling, and discourse examination. Basic NLP tools, such as word frequency analysers, concordance tools, and sentence-length analysers, are rule-based and descriptive in nature. They do not interpret meaning but reveal patterns that may otherwise remain unnoticed in close reading. Scholars have emphasised that NLP should be viewed as complementary to traditional literary analysis. Its value lies in providing quantifiable linguistic data that supports interpretive claims. When applied

cautiously, NLP tools can enhance stylistic and pragmatic analysis without reducing literature to mere data

Speech Act Theory and Literary Analysis

Speech Act Theory stems from the work of John L. Austin and John Searle, who studied how speakers use language to achieve a desired effect and how listeners interpret the meaning of what is said [7]. It posits that utterances perform actions beyond conveying propositional content. Searle's classification of assertives, directives, commissives, expressives, and declaratives has been widely applied in pragmatic studies of spoken and written discourse. In literary contexts, speech act analysis allows researchers to examine how characters employ language to assert beliefs, issue commands, express emotions, or commit to future actions. In narrative texts, speech acts contribute to character development, power dynamics, and thematic progression. Applying Speech Act Theory to literary dialogue enables a systematic exploration of how meaning is enacted through interaction rather than merely described.

I. NADIA HASHIMI'S NARRATIVE CONTEXT

The Sky at Our Feet is a form of realistic and middle-grade fiction by the Afghan-American author Nadia Hashimi. It portrays the perilous journey of an Afghan-American boy, Jason D, known as Shah only to his mother and aunt, who has been living illegally in the United States since his father's murder in Afghanistan. After his mother's arrest by two officers, his loneliness led him to seek survival in another destination, where he confronted numerous disappointments while finding his relatives in New York city. He met a girl, Max, who planned a daring escape out of their conditions, as both were seeking safety and salvation that was achieved through a sequence of suffering obstacles and adventures. Hashimi's narrative foregrounds vulnerability, resilience, and moral responsibility, often conveyed through urgent and emotionally charged dialogue. Despite the novel's thematic richness, limited attention has been paid to its linguistic and pragmatic dimensions, even in many previous studies. This gap is addressed in this study by examining how speech acts function within the narrative and how NLP tools can support such analysis.

II. METHODOLOGY

This study adopts a qualitative linguistic-pragmatic approach supported by Natural Language Processing techniques. Although NLP is often associated with computational approaches, this study adopts an NLP-informed qualitative approach in which key NLP procedures are applied without the interference of the machine by the researcher. Relying on distant close reading, the analysis is carried out where the texts are extracted and segmented into meaningful dialogue units, pragmatically salient utterances are identified, and linguistic functions are categorised based on their contextual roles. Speech Act Theory provides the analytical framework for pragmatic interpretation. This analysis employed some NLP techniques apt with SAT to support sentence segmentation, dialogue identification, and the detection of linguistic markers relevant to speech act classification. As a methodological lens, NLP does not function as an automated mechanism but as a human-guided structural linguistic analysis that preserves human interpretation as the central analytical authority. The study employs NLP techniques applied through researcher-led linguistic analysis rather than computational tools. These human-centred NLP techniques are implemented at a conceptual level through human analysis, as their interpretive nature aligns effectively with the analytical requirement of speech act theory to support and facilitate the systematic organisation of utterances.

III. TEXT SELECTION

Dialogue-rich passages from *The Sky at Our Feet* are selected for analysis, particularly scenes involving moments of warning, command, promise, acknowledging, informing, and interpersonal decision-making. These segments are representative of the novel's communicative intensity and thematic concerns.

IV. APPLICATIONS OF NLP IN LINGUISTIC ANALYSIS

Notably, NLP offers a powerful toolset for analysing literary text linguistically through various NLP tools and techniques. Considering the current study, it supports the actual analysis approach, SAT, through conceptualisation rather than computational text processing and preprocessing and text classification techniques without machine interference, excluding technologies related to NLP. It can be performed, in this study, to simplify the division into smaller units, words or sentences. It can be helpful for text selection without interfering with

technical computer applications or Chatbots. These techniques include:

- Distant Reading and Function Modelling.

As it is stated by Franco Moretti, the concept of distant reading enables scholars to analyse large literary corpora without close reading each text [4]. This technique helps in grasping functions or themes within a specific context, which is the essential role of the SAT theory as the actual analysis approach. But through this sense, the utterances' function or theme can be recognised smoothly with the supportive role of NLP. These techniques are used to support, identify, and facilitate, not determine, interpretive analysis.

- Sentence Segmentation.

Segmentation facilitates the organisation of the text into smaller, more manageable units, hence enhancing the ability of NLP algorithms to process it [8].

V. SPEECH ACT CLASSIFICATIONS

Speech act theory, a cornerstone of pragmatics, explores how language functions not just to convey information but also to perform actions within a specific context [9]. Dialogue is categorised according to Searle's speech act taxonomy: assertives, directives, commissives, expressives, and declaratives if found. Speech Act Theory, in this study, examines how language performs actions in context, focusing on the intended meaning and communicative function rather than just the literal form of words.

- **Assertives**

When we use language to make statements about things in cases of asserting, claiming, reporting, etc. [10].

- **Directives**

Another category aims to get the hearer to do something [11].

- **Expressives**

Expressive speech acts aim at signifying "the psychological state specified in the sincerity condition about a state of affairs specified in the propositional content" [12].

- **Commissives**

According to Ronan (2015), the speakers promise to undertake a certain action, and in that way, they make the world fit their words.

- **Declaratives**

To bring about change in the world by representing it as having been changed [14].

VI. ANALYSIS OF EXTRACTED SPEECH SITUATIONS

The integration of NLP techniques with Speech Act Theory demonstrates that pragmatic analysis of literary dialogue can be enhanced. NLP techniques provide a systematic procedure for identifying linguistic patterns, while speech act analysis interprets these patterns within narrative and social contexts. Importantly, the study confirms that NLP can be replaced with human techniques in analysis, acknowledging that applying certain techniques through humans is time-consuming; however, the depth of contextual and pragmatic insight is achieved.

VII. NLP-INFORMED TECHNIQUES AND PRAGMATIC ANALYSIS

Pragmatic analysis of narrative and dialogue extracts using NLP and Speech Act Theory in the selected utterances, as follows:

“Get off the roof this minute! You’re not supposed to be up here.”

Neither is she, really, unless she wants to have her other hip replaced.

“Sorry,” I mumble, trying to hide the bowl of water and rice from Ms. Raz’s squinty glare.

[15, p. 04]

here	negation detection	supposed to)		control and reinforcing norms
Sorry	Sentence Segmentation; lexical marker detection	Apologetic lexical item (sorry)	Expressive	Acknowledging wrongdoing and signalling submission

Table 1. NLP-informed techniques, speech act classification, and function

Utterance Analysis

Through a human-centred approach, the selected extract was examined with an NLP-informed linguistic processing framework, in which the dialogue was systematically segmented through close reading into discrete utterances suitable for pragmatic analysis. Guided by core NLP principles such as utterance identification and

linguistic feature recognition, the researcher isolated three speech units: “Get off the roof this minute!”, “You’re not supposed to be up here”, and “Sorry.”

Based on Speech Act Theory, the first two statements were classified as Directive speech actions, thus functioning as instructions. The illocutionary force is enhanced by the urgent syntactic structure and the presence of a temporal urgency marker, reflecting the inequality of authority and power in the exchange. As an expressive speech act, “Sorry” was classified as indicating submission and apology. Since it indicates emotional restriction and discomfort, ‘Mumble’ is a reporting verb which co-occurs with “Sorry” and supports further pragmatic interpretation. Based on human linguistic judgement, the interpretation of pragmatic meaning and illocutionary act was entirely carried out; however, it must be noted that NLP-informed procedures could only serve as organisational and analytical guides in this research. Systematic identification of linguistic signals and speech units is provided in this investigation.

“You’re going to be all right, hon. Don’t be scared, okay? They’re going to take really good care of you

Utterance	NLP Techniques used	Linguistic indicators identified	Speech Act Type	Illocutionary Force/ Pragmatic Function
Get off the roof this minute!	Sentence Segmentation; imperative pattern detection	Imperative verb (get off); temporal urgency (this minute)	Directive	Command/ Enforcing authority and immediate compliance
You’re not supposed to be	Sentence Segmentation; modal/	Prohibition marker (not)	Directive	Warning: Prohibition/ Justifying

upstairs, and when you're feeling a little more together, you can tell your nurse what your name is and where we can find your family." [15, p. 53]

Utterance	NLP Techniques used	Linguistic indicators identified	Speech Act Type	Illocutionary Force/Pragmatic Function
You're going to be all right, hon.	Sentence Segmentation; future construction detection	Future tense (going to); affective address (hon)	Assertive	Reassurance/calming and emotional support
Don't be scared, okay?	Imperative pattern detection	Negative imperative (don't be)	Directive	Comforting command/reducing fear
They're going to take really good care of you upstairs	Sentence Segmentation; evaluative phrase detection	future construction; positive evaluation	Assertive	Informing/reassuring / building trust
You can tell your nurse what your name is and where we can find your family	Model verb detection	Model verb (can)	Directive	Gentle instruction / guiding future action

Table 2. NLP-informed techniques, speech act classification, and function

Utterance Analysis

This extract was examined utilising a researcher-

directed, NLP-informed linguistic framework, wherein the dialogue was divided into four utterances through meticulous reading, adhering to linguistic principles. Future-oriented constructions (you're going to), negative imperatives (don't be scared), modal expressions (can tell), and affective lexical items (hon, really good care) are the central focus in the analysis, which helped in arranging the pragmatic speech situation. The phrases "You're going to be all right, hon" and "They're going to take really good care of you upstairs" are examples of Assertive speech acts that show support and comfort. As examples of directive speech acts, the phrases "Don't be scared, okay?" and "You can tell your nurse..." gently guide how the person responds emotionally and verbally. Pragmatically, the interaction is figured out by supportive directives and reassuring assertives that collectively establish a caring and protective communicative posture. Since the classifications of speech acts and pragmatic functions were established through human interpretive judgment in this analysis, NLP-informed techniques served as organisational and heuristic assistants.

"Once we find him, we won't bother you for anything else. We appreciate all your cooperation so far. And you have my card. Please call me the second you see or hear from him."

"Of course, Officer!" [15, p. 267]

Utterance	NLP Techniques used	Linguistic indicators identified	Speech Act Type	Illocutionary Force/Pragmatic Function
Once we find him, we won't bother you for anything else	Sentence segmentation; modal detection	Future modal (won't); conditional clause	Commissive	Promise / Reassurance and mitigation of authority
We appreciate all	Lexical marker identification	Evaluative verb (appreciate)	Expressive	Gratitude/Politeness

your cooperat ion so far	on	te)		ss and rapport- building
And you have my card	Sentence segmentati on; declarativ e detection	Declarati ve factual statement	Assertiv e	Informi ng/Estab lishing instituti onal presence
Please call me the second you see or hear from him	Imperative detection; politeness marker detection	Politenes s marker (please); urgency (the second)	Directive	Request/ Eliciting cooperat ion
Of course, Officer!	Dialogue turn detection; lexical cue identificati on	Complia nce marker (of course)	Expressi ve/ Commis sive	Accepta nce/ Acknow ledging authorit y and cooperat ion

Table 3. *NLP-informed techniques, speech act classification, and function.*

Utterance Analysis

In the extract above, a researcher-led, NLP-informed linguistic framework was used, in which the dialogue was divided into separate utterances informed by linguistic principles. Assisting in organising the pragmatic utterances, the identification of modal constructions (won't), politeness markers (please, appreciate), forms of directives, and indicators of compliance (of course) contributed to the formation of the main analytical framework. Under Speech Act Theory, as a Commissive speech act, the utterance, "Once we find him, we won't bother you for anything else", is classified because it gives assurance through a promise. Exposing gratitude and institutional politeness, the statement "We appreciate all your cooperation so far" is an Expressive speech act. Moreover, the utterance "And you have my card" works as an Assertive by providing information while asserting authority; "Please call me the second you see or hear from

him" is a Directive that mixes urgency with politeness. With an Expressive-Commissive act, the answer "Of course, Officer!" is showing acceptance and willingness to comply.

VIII. FINDINGS

In this study, the investigation reveals that assertive, directive, commissive, and expressive speech acts dominate the selected dialogues, reflecting interactions shaped by authority, reassurance, and cooperation. While Speech Act Theory enabled the interpretation of pragmatic functions, Researcher-led, NLP-informed processing facilitated the systematic identification of utterance boundaries and salient linguistic cues. Overall, without replacing qualitative interpretation, the findings demonstrate that human-centred NLP techniques effectively support pragmatic analysis through textual structuring and systematic organisation of linguistic data.

IX. CONCLUSION

Ultimately, this study presents an innovative framework that combines human-centred NLP techniques with a pragmatic analysis of narrative dialogue in Nadia Hashimi's *The Sky at Our Feet*. This study demonstrates that researcher-led, NLP-informed techniques can effectively facilitate the linguistic analysis of literary dialogue without reliance on computational automation. The analysis reveals how speech acts function to construct authority, reassurance, and cooperation within narrative interaction by integrating systematic linguistic processing with Speech Act Theory. The findings confirm that human-centred NLP approaches offer a methodologically sound and context-sensitive framework for literary discourse analysis. While the human-centred application of NLP remains methodologically appropriate, it also revealed certain limitations, since not all NLP techniques can be feasibly applied through human analysis, and some procedures require considerable time and effort. The findings confirm that Human-centred NLP approaches underscore the value of interdisciplinary approaches and also respect the interpretive nature of literature while benefiting from technological frameworks. Overall, it is demonstrated that human-centred NLP techniques effectively support pragmatic analysis through organising linguistic data without replacing qualitative interpretation.

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