# Deciphering Implicatures: On NLP and Oral Testimonies

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## Abstract

The utterance of a word does not intrinsically convey its intended force. The semantic of utterances is not shaped by the precise references of the words used. Asserting that "it is shameful to abandon our country" does not merely convey information; rather, it asserts an act of resilience. In most of our exchanges, we rarely utilize sentences to describe reality or the world around us. More frequently, our statements aim to express opinions, to influence, or be influenced by others. Words carry more than just their syntax and semantics; they also embody a pragmatic normative force. This divergence between literal and conveyed meaning was depicted in the literature of philosophy of language as the difference between sentence meaning and speaker meaning. Where the former is the literal understanding of the words combined in a sentence, the latter is what the speaker is trying to convey through her expression. In order to derive the speaker meaning from the sentence meaning, J.L. Austin relied on conventions, whereas H.P. Grice relied on conventional and nonconventional implicatures. This paper aims to decipher how we can infer speaker's meaning from sentence meaning and thereby capture the force of what has been articulated, focusing specifically on oral testimonies. I argue that oral testimonies are forms of speech acts that aim to produce normative changes. Following this discussion, I will examine various natural language processing (NLP) models that make explicit what is implicit in oral testimonies with its benefits and limitations. Lastly, I will address two challenges, the former is related to implicatures that are not governed by conventions and the latter is concerned with the biases inherent in hermeneutical approaches.

## 1 Introduction

'You do not suppose that you can learn, or I explain, any subject of importance all in a moment; at any rate, not such a subject as language, which is, perhaps, the very greatest of all'-Socrates.

The utterance of a word does not intrinsically convey its intended force. For instance, when Nayfah Abd al Tayih[1], one of the testimony givers in the Al Jana collection found in Palestinian Oral history Archives, expresses, "عار علينا نترك بلدنا" ("Shame on us if we leave our homeland"), or when Fatime Abd al Samad[2], another testimony giver in the same archive, states, "هذا واجبي لازم أقوم في" ("This is my duty, and I must fulfill it"), what is produced is not merely sound waves traveling through the air. The meaning of these utterances is not shaped by the precise references of the words used. For example, asserting that "it is shameful to abandon our country" does not merely convey information; rather, it asserts an act of resilience. In most of our exchanges, we rarely utilize sentences to describe reality or the world around us. More frequently, our statements aim to express opinions, to influence, or be influenced by others. Words carry more than just their syntax and semantics; they also embody a pragmatic normative force. This paper aims to decipher how we can infer speaker meaning from sentence meaning and thereby capture the force of what has been articulated, focusing specifically on oral testimonies. The first section will establish the semantic theory that characterizes linguistic practices as normative, drawing upon existing literature in speech act theory. I will argue that oral testimonies should be considered as forms of speech acts. The second section will address the indeterminacy of the implications of what is said, providing tools to clarify such indeterminacies, specifically through the examination of conventional and conversational implicatures. Follow-

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[1] Palestinian Oral History Archives, American University of Beirut, Al Jana, Nakba Collection, recorded 06/1997

[2] Palestinian Oral History Archives, American University of Beirut, Al Jana, Nakba Collection, recorded 07/1997

ing this discussion, I will examine various natural language processing (NLP) models that that facilitate the work of researchers in the field of oral history. Lastly, I will address two challenges, the former is related to implicatures that are not governed by conventions and the latter is concerning the biases inherent in hermeneutical approaches.

## 2 Saying is Doing: On the normative aspect of language

In the literature of the philosophy of language, the force of a word, known as illocutionary force, is central to speech act theories. J. L. Austin, in *How to Do Things with Words*, defines this force as follow:

> The utterance of the sentence is part of, the doing of an action, which again would not normally be described as... merely saying something. The action which is performed when we say something is an illocutionary act; for example, informing, ordering, warning, undertaking (Austin, 1965).

Speech can be viewed as a normative vehicle aimed at transitioning from a set of entitlements that enable the speaker to articulate a sentence toward instituting normative changes in the status quo. The former will be referred to as the input of speech, while the latter will be regarded as the output of speech. The input is the set of entitlements, conditions and circumstances that gives credibility to the speaker as a proper speaker i.e. one can only pronounce a couple husband and wife if he is a registered priest. The output is the normative changes the utterance institutes i.e. once the priest utters the expression then the couple are socially and legally referred to as a married couple. Since the input of the expression is governed by a set of norms that enable the utterance in question, and the output of the expression is the normative changes it invokes in the status quo then linguistic practices can only be understood within a normative social structure. Language is used as a tool to mitigate normative societal practices by inducing normative changes such as asserting a commitment is taken as a justification for your future behavior, making a promise is taken as producing expectations for the hearer, issuing an order is taken as inducing a feeling of obligation in the hearer etc. Linguistic activities are interwoven with nonlinguistic activities.

Applying the dichotomy between input and output, we can analyze the relevant testimonies in the following manner. Fatime is a testimony giver in a collection of archive that aim to provide the oral history of Palestinians since pre 1948. Fatime's set of input is successfully met, as she is a Palestinian, she was living in A'akka in 1948 and she was chosen by the interviewer to be a testimony giver. In addition, the fact that she was resisting leaving her house behind, ensuring that she gets all her family members from under the rubble, insures that Fatime is a legitimate candidate to deliver a testimony about her perspective on what her duty is. The output of the testimony in question does not only serve to mirror a reality about the facts that unfolded back then but rather it is an authoritative claim that assert her commitment towards her family members and her household. In this specific explication we can depict the interaction between the linguistic and nonlinguistic aspects of oral testimonies. In order for us to be able to recognize the output of the speech and give its proper normative aspect -as a prescription rather than a description- it is essential to be familiar with the context in question.

### 2.1 The illocutionary Force and the Indeterminacy of Hermeneutics

> The illocutionary force of an utterance determines the type of illocutionary act being performed. A single sentence can be used with varying illocutionary forces; for instance, the phrase 'It is raining' may function as an assertion, a conjecture, or a question (Searle, 1969).

If you are asking someone about the weather and they answer 'It is raining', you take their assertion as reporting a fact about the weather. If a child asks her father whether she can play outdoors and he answers that 'It is raining', then his answer is a rejection to the proposal. For the hearer to accurately derive what is implied from what is said, immersion in the context surrounding the conversation is essential. This context can be analogous to a stage in a theater, where each prop, costume, and bodily gesture contributes to the audience's understanding of the actor. The more the scene unfolds and the mise en scène is revealed, the clearer the meaning behind the actor's expressions becomes and the better the audience can pick from the different possibilities of illocutionary outcome. To fully

comprehend the speaker's utterance, one must be familiar with her identity (Who is making the utterance?), her personality (Is she typically sarcastic, serious, or witty?), and the situational and historical background. This list of contextual elements is not fixed; it is adaptable based on the aims of the analysis. On another note, the context encompasses not only the speaker but also the audience, whose state of mind can influence interpretation—what one listener finds offensive, another might find humorous. Thus, the aforementioned list which would help in deriving what was meant from what was said should include information about the speaker, the hearer, and the dynamics of their interaction.

Given the peculiarity of oral testimonies the characteristics of the context are adapted to answer the following questions:: a) the identity of the researcher which answers to the question: Who is she affiliated with? What is the aim of her study?, b) the identity of the testimony giver (the narrator): Based on what was she chosen to give a testimony? What were her relevant social and historical condition?, c)the audience the listeners of the audio or readers of the transcript: To whom is this narrative directed? What is their background information? The contextual elements presented contributes the semantic dimension of the testimony given. The plasticity of its semantic value is but an indication of the coupling between words and society.

Given the indeterminacy of the hermeneutical scheme in question one needs to have some basic assumption to avoid a case of 'Téléphone cassé' where the more the expression is repeated the farther we dive away from the initial speaker meaning. H. P. Grice in Logic and conversation distinguishes between sentence meaning and speaker meaning. The former pertains to the literal meaning of the utterance, while the latter refers to the intended meaning conveyed by the speaker. A proper understanding of the speaker meaning requires an understanding of the implications of what was said. For the hearer to be able to derive the implications implicit in the discourse some basic assumptions need to relied on.

## 2.2 Deriving what is not said but rather implied

Grice introduces the cooperative principle as a guiding tenet for effective communication:

> Make your conversational contribution such as is required, at the stage at which

it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged(Grice, 1991) .

The primary assumption necessary for grasping the implications of an utterance is that the speaker is cooperating with the listener. When Nayfah claimed "عار علينا نترك بلدنا" after she was asked about the imbalance of power between the colonizer and the colonized, if the assumption is solely descriptive we will not be able to derive the true meaning of what was said. Nayfah's speech act is an assertion which serves as a commitment that justifies her action. The connection between saying and doing is revealed through the lens of the cooperative principle. It is only by taking into consideration the context in question that we can recognize the implication of Nayfah's utterance.

## 2.3 On Conventional and Conversational Implicature

Some of the implications between what is said and what is implied are conventional i.e. the relation between what is said and what is implied can be easily grasped for anyone familiar with the conventions in question. Other implications are non-conventional, Grice refers to these as conversational implicature. He describes them as a

> certain subclass of non-conventional implicature which I shall call conversational implicatures, as being essentially connected with certain general features of discourse (Grice, 1991).

The common norm underlying both conventional and nonconventional implicature is that the speaker is being cooperative with the direction of the talk exchange. Since the former is conventional then it should follow some explicit norms and rituals. Grice identifies four maxims that underpin cooperative principle: 1)Quantity: make your contribution as informative as required, 2)Quality: do not say that which you believe is false,3)Relation: your utterance should be relevant to the stage of the talk exchange you've reached and 4)Manner: avoid any obscurity or ambiguity in your speech exchange(Grice, 1991) . These maxims are not found apriori, they are routed in societal practices and constitute the precondition of making a meaningful talk. Since they are derived from empirical observations that make a talk exchange efficient, then

there is the possibility that a speaker can violate, exploit or dismiss at least one of the maxims.

Other types of implications are conversational. Whenever at least one of these maxims is violated, the resulting instance can be identified as a conversational implicature. Unlike conventional implicatures, the conversational implicature is not a direct inference from conventions in question but rather it presupposes the exploitation of the conventions making it more difficult for the hearer to naturally derive the speaker meaning from the sentence literal meaning. This requires additional interpretative effort to understand what is being conveyed. In deciphering such meanings, Searle and Austin emphasize the importance of factual background information, the principle of cooperation, and the conditions outlined in the theory of speech acts. Grice, however, highlights the role of intuition

> The presence of conversational implicature must be capable of being worked out; for even if it can in fact be intuitively grasped, unless the intuition is replaceable by an argument, the implicature will not count as a conversational implicature: it will be a conventional implicature (Grice, 1991).

## 3   Digitalized Oral testimonies

Whether it is the power of conventions or that of intuition, what was mentioned above is but a proof of the complexities reigning the realm of semantics. William Schneier in *Oral History in the Age of Digital Possibilities* highlights the complexity in the epistemic approach towards the narrative. The oral historian must not only comprehend the voice of the narrator but also ensure that the force behind this voice is preserved in the written narrative.. He claims 'I have gained a strong appreciation for the value of hearing accounts many times over, and in different contexts, in order to understand the meaning and to recognize multiple meanings, depending on context and audience' (Nyhan and Flinn, 2016). One has to be aware how easily one can make assumption about meaning. It should be as well clear that the variety of ways in which people use and understand oral narrative give birth to different accounts of the same discourse said or written. In order to make sure that the narrative is authentic to what was narrated, what needs to be preserved is the interchange between the researcher and the researched, the historical background in question, the nuances of oral narratives, the conventional meaning of the words used and the context at hand, while ensuring that the Gricean principle and maxims are being observed.

### 3.1   Oral History: Written or Heard?

> The human voice consist of carefully crafted and culturally shaped pressure waves traveling through the air in the form of words, woven together in the form of a story (Boyd, 2014).

The story, shaped through the act of narrating, must be preserved in the written narrative while considering the factors discussed earlier. To fully capture the force of spoken language, it is often more effective to listen to the recording—especially if it is in the listener's native language—than to rely solely on the written account. Spoken words tend to be clearer and convey more nuances and sentiments than written ones. The innovation and advancement of technology have introduced new methods for preserving oral testimonies. From microphones and recording machines to wax cylinders, algorithms, software, digital archives, and technological progress has made it increasingly practical to preserve and disseminate these narratives. The internet, in particular, has become an invaluable tool for making recordings accessible to the public. Palestinian Oral History Archive (POHA) is an example of a solid database that preserves more than 1000 hours of testimonies narrated by first generation Palestinians and other Palestinian communities displaced in Lebanon. The digital platform created for this archive allows users easy access to numerous recordings 'the eyewitness narratives of first generation refugees have been instrumental to the survival of the cultural geography of spaces, traditions and histories from pre-1948 Palestine'(mentioned in the collection). This digitization of the material is an invaluable innovation that ensured the flourishing of oral history in the digital world. Instead of merely reading narrative, audiences now have the opportunity to engage directly with the actual recordings. It is not only the recording that was preserved but also the life story of the participants as they were narrated. Their memory, their past and their life story were protected and made available to the public, only a click away from immersing themselves in the compelling stories.

> Oral history... is the verdict of those who weren't there on those who were (Nyhan and Flinn, 2016).

Systems such as Oral History Metadata Synchronizer (OHMS) provide a new opportunities that makes the access to oral testimonies even more user friendly. Navigating these recordings reveals textual titles and sets of keywords that correspond to specific segments within the audio. This feature is beneficial for researchers, enhancing the efficiency of their research work. Instead of spending countless hours listening to entire testimonies to extract relevant information for their study, researchers can now browse through keywords, listen to the corresponding segment and build their analyses more effectively. The advantages of a metadata synchronizer are evident in the Palestinian Oral History Archive (POHA). Each interview in this extensive database is accompanied by a time-coded transcript, enabling researchers to click on specific keywords corresponding to particular time segments in the recording. The primary benefit of metadata synchronizers lies in their ability to allow researchers proficient in the narrator's language to directly listen to the recording. This user-friendly, firsthand access is the most effective way for researchers familiar with the language of the discourse to fully grasp the implications of the uttered sentences. After providing the researcher an easy access to the recorded testimonies, it is her role to capture conversational implicatures or address potential biases.

While the advantages of OHMS are clear, they primarily function as a search engine for those who are familiar with and immersed in the language of the speaker. As a Lebanese researcher, I was impressed by the ease of accessing various recordings. The indexing system allowed me to focus on specific segments relevant to my studies. I encountered no difficulty in understanding the content, being a native Arabic speaker and familiar with the socio-political context of the interviews. There are two significant challenges: listening to the testimonies requires more time than reading the narrative, and, more importantly, not all scholars are familiar with or immersed in the narrator's language. This raises an important concern: how can one achieve a comprehensive understanding of what is narrated from looking at the narrative (whether translated to one's native language or not)? Additionally, how can a transcript fully capture the hermeneutics of spoken language?

## 4  On Natural Language Processing: What is natural about natural language?

What distinguishes language processing applications from other data processing systems is their use of knowledge of natural language (Keselj, 2009). This approach does not focus solely on the formal understanding of language as developed by philosophers like Gottlob Frege and Bertrand Russell, but rather emphasizes the informalist aspect of language. Grice presents two accounts that are relevant to our subject of study. On one hand in the literature of philosophy of language, the formalists employ formal devices such as $\wedge, \vee, \exists, \forall$ to represent their counterparts in natural language such as 'and, or, there exists, for all'. Words that do not conform to this formal structure are often viewed as exceptions to be minimized or disregarded. However, following our initial examination, which centers on language as a speech act and grounds semantics in the illocutionary force attached to an utterance, we depart from a strictly formalist view. As Grice notes,

> language serves many important purposes besides those of scientific inquiry. There are very many inferences and arguments expressed in natural language and not in terms of these devices, that are nevertheless recognizably valid (Grice, 1991).

If we adopt a formalist approach to natural language, it would seem plausible that any algorithm could accurately depict the semantics of our speech. However, given that we do not take this approach, the task of preserving the natural language of oral testimonies becomes significantly more complex. As previously noted, context plays an indispensable role in determining the semantic value of an utterance. Therefore, any model employed for this purpose must be enhanced with deep learning capabilities, particularly those equipped with word sense disambiguation (WSD) tasks—i.e. the task of selecting the correct sense of a word within a given context.

Before detailing the specific tasks that an NLP model should encompass, it is important to reiterate the context we are addressing: individuals who prefer reading the transcript or those unfamiliar with the original language and thus rely on a translated transcript. For this to be feasible, the

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initial model must be capable of converting speech into text. Automatic Speech Recognition (ASR), a subset of natural language processing, performs this function by transcribing spoken words into text, thereby facilitating analysis, search, and archiving. The technologies under ASR uses machine learning algorithms to convert spoken language into text. It recognizes audio input, identifies the phonetic components of the segments, and transcribes them into written words (Keselj, 2009).

For the native speaker, incorporating the audio with the text presents the ideal scenario which will provide a rigorous framework in truly capturing the illocutionary force of oral testimonies. However, it is the case that most researchers are not familiar with the native language of the narrator. To preserve the hermeneutics of narrated content, particularly in terms of conventional and conversational implicatures for a foreign language, a speech-to-text model alone is insufficient. In most cases, the challenge extends beyond phonetics, morphology, and syntax to encompass semantics and pragmatics.

To adequately capture these multilayers of meaning, an NLP model incorporating deep learning architectures and techniques is necessary. Deep learning in natural language processing features a multidimensional approach that assists the reader in interpreting the speaker's intended meaning. Phonetics, which studies linguistic sounds and their relationship to written words, is a foundational component in any NLP system. Morphology, the study of the internal structure of words, is also crucial, as it helps link words to sounds and understand their composition—an essential step for interpreting word meanings and grammatical structures. Lastly, syntax is vital for discerning the structural relationships among words in a sentence, laying the groundwork for an accurate representation of both meaning and context.

## 4.1 On the pragmatics of the expression

If we stop at this point, we achieve only a formal understanding of natural language. However, as previously mentioned, natural language—especially in the context of oral history— cannot be fully understood through formal language alone. To capture the nuances necessary for comprehending conventional and conversational implicatures, an NLP model must incorporate characteristics that allow readers of transcripts to grasp these deeper meanings. This is achievable through the following

two essential components: semantics and pragmatics. The study of semantics, grounded in Frege's compositionality thesis from *Begriffsschrift* (1879), posits that the sense of a compound expression is determined by the senses of its constituents. In the context of deep learning, semantics involves the analysis of word meanings and how they combine to convey the meaning of a sentence. However, even at this level, the generated output primarily captures the sentence meaning. To move beyond this and capture the normative aspects of discourse, deep learning models integrate pragmatics. Pragmatics situates the use of language within a broader context, allowing the analysis of linguistic discourse to extend beyond isolated sentences and incorporate the standards and conventions that shape communication (Goyal et al., 2018).

Deep learning models encompass the five characteristics outlined above, enabling them to capture nuanced meanings and their relationships to text, as well as perform sentiment analysis that makes explicit the emotions implicit within an utterance. BERT (Bidirectional Encoder Representations from Transformers) is an example of a model that can support the analysis of text generated by ASR. BERT's bidirectional understanding of sentences—analyzing both preceding and following text—allows it to contextualize meaning within a broader discursive framework. The capacity for sentiment analysis is particularly vital in testimonies that shape the life story of the narrator. BERT-based models provide summaries of lengthy testimonies while emphasizing key events and themes. By fine-tuning BERT for sentiment analysis, it becomes possible to identify emotional tones within testimonies, such as anger, fear, and more. The dual capacity for generating concise summaries and conducting sentiment analysis equips researchers with tools that not only enhance efficiency but also offer insights into the semantic nuances of discourse, which can shift depending on emotional variations. Recognizing sentiments is particularly important, as it aids researchers in understanding the implications of the narrator's speech. For example, the statement, "Shame on us to leave our country" when expressed in a tone of sadness and helplessness, may suggest that the narrator feels forcibly displaced and powerless. Conversely, if the same statement is delivered with anger, it could reflect the narrator's stance on resistance and resilience. By using ASR to transcribe spoken words into written text and employ-

ing BERT to interpret both the explicit content and the implicit meanings within the text, a comprehensive approach can be achieved. This method is especially beneficial for non- native speakers, enabling them to engage more effectively with the narratives conveyed.

NLP offers a powerful tool that has made the history of oral testimonies more accessible to the public. For listeners immersed in the language being narrated, systems like OHMS provide the advantage of a user-friendly archive, complete with keywords and titles that correlate with their exact timing in testimony segments. For those unfamiliar with the language, combining ASR with BERT can facilitate a deeper hermeneutical understanding, helping to interpret what is implied but not explicitly stated. However, whether the listener is an AI model or a human, deriving the meaning of what is said (illocutionary force) comes with its own set of obstacles. In the final section of my paper, I discuss two challenges: one specific to AI and non-native readers, and another that considers the possibility of a bias-free epistemic approach to the utterances of the narrator.

## 5  Challenges to be resolved

### 5.1  On the unpredictability of conversational implicatures

As previously discussed, some implicatures are conventional while others are conversational. Referring to conventions means referring to a set of rules and rituals that, through repeated use over time, form a pattern known as 'conventions.' It is relatively straightforward for an NLP model to identify such patterns and infer the conventions. Similarly, for a foreign listener, an immersion in the native speaker's community over time can facilitate the recognition of these patterns and the abstraction of conventions. Therefore, grasping conventional implicature requires a degree of immersion in the other's community to predict the meaning behind spoken language, a possible task that both NLP models and human effort can achieve.

Conversational implicatures on the other hand are intrinsically non-conventional and do not adhere to predictable patterns. An AI trained to make connections based on pattern recognition would struggle to capture the essence of conversational implicature. By definition, Grice introduces conversational implicature as a move that exploits established norms. When narrating one's story, it

is inevitable that both conventional and conversational implicatures will occur. While capturing the former allows for the preservation of the illocutionary force governed by patterns, failing to mirror the latter results in an incomplete representation of the illocutionary force generated by conversational implicatures. As a result, the hermeneutical account derived from conversational implicatures is often less precise and clear.

### 5.2  On biases inherent in the discursive practices

The second challenge pertain to the presence of bias on a human and AI level. Miranda Fricker a feminist philosopher introduced in her book *Epistemic Injustice, Power and the Ethics of Knowing*, the concept of epistemic injustice. Her focus is on the concept of injustice in the epistemic activity that harms the individual in her capacity as a knower. For the purposes of this paper, which centers on oral testimonies, the focus will be on testimonial injustice, one of the key forms of epistemic injustice.

Epistemic and linguistic conduct are immersed in the context of social power i.e. the ability to exert force and constraint on the other. The ability to assert authority is essential to discursive practices as some are distinguished as authoritative discourse whereas others as marginalized discourse. Fricker defines identity power as

> a form of social power which is directly dependent upon shared social-imaginative conceptions of social identities of those implicated in the particular operation of power...That governs for example what it means to be a woman or a man, or what it is or means to be gay or straight, young or old, and so on (Fricker, 2007).

Constructed social identities, such as being labeled a 'refugee' or an 'Arab,' create prejudices that impact how individuals are perceived. When these prejudices lead the hearer to assign less credibility to the speaker than warranted, it constitutes testimonial injustice. Such biases are not exclusive to human interactions but also extend to AI. The NLP models under consideration build implicatures based on social patterns, which are often laden with identity power and prejudices. If the database includes inherent prejudices, the AI model will inevitably replicate these biases.

A notable example outside the realm of oral testimonies occurred in 2015 when Google's algorithm mistakenly labeled images of Black individuals as gorillas. This error was rooted in the lack of diversity within the training datasets. A similar issue arises in the context of oral testimonies, where AI tools risk misrepresenting narratives by perpetuating gender biases embedded in stereotypical language patterns within the data. For instance, even when a male nurse and a female doctor were intentionally identified as such, the AI system continued to associate the roles with traditional stereotypes, labeling the nurse as female and the doctor as male. Consequently, AI models reflect and perpetuate the social biases inherent in the conventional patterns they are trained on.

## 6 Conclusion

In navigating the interplay between oral testimonies, natural language processing, and hermeneutics, we are reminded that language is not merely a vehicle for information but a dynamic, context-dependent tool shaped by the voices that tailor it. This paper has explored how NLP models, when combined with deep learning, can serve as powerful resources for capturing both the explicit and implicit content of spoken narratives. However, the complexities in deriving conversational implicatures and the biases that underpin both human and AI hermeneutical scheme present significant challenges. To engage meaningfully with oral testimonies, particularly in diverse linguistic and cultural landscapes, we must be vigilant of the limitations and assumptions embedded in our approaches. Only through recognizing these complexities that we can strive for an epistemic practice that respects the speaker's voice and preserves the force of their words. Addressing these challenges demands a commitment to refining NLP models, not only to replicate patterns but to approach the nuanced approach of understanding—where words, identity, and meaning converge in testimonies.

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