

# ALGORITHMS OF LANGUAGE IN SPEECH BY THE PRESIDENT OF REPUBLIC INDONESIA

\*<sup>1</sup>Dwi Santoso, <sup>2</sup>Sigit Apriyanto

***ABSTRACT**--Political genre analysis has for a long time been the focus of consideration for many researchers as they find a rich source of discovery about the nature of language handling due to their organized and well-established structure. While politicians or president may be interested in how to gain the provision from the public, linguists and critical discourse, analysts might be interested in the way such support is enacted by language. In this paper, I would like to analyse Indonesian President Joko Widodo's speech from the perspective of algorithms language. In particular, I shall discover the idea that this speech is constructed by analytical thinking, clout, and authentic. The text files were prepared for LIWC analysis according to the speech transcripts to compute the percentages of analytical thinking, clout, and authentic-related words used by the President Joko Widodo during his speech. The findings show that Joko Widodo was used 98,26% (high) or 1,74% (low) on analytical thinking, 77,79% (high) or 22,21% (low) on clout, and 13,48% (high) or 86,52% (low) on authentic. The findings can be used both for applied linguists interested in discourse analysis and language practitioner interested in the use of critical discourse approaches to the analysis of speaking skill.*

***Keywords**--Algorithms language, Joko Widodo, Speech, LIWC.*

## I. INTRODUCTION

In general, the concept of an algorithm has confirmed to be one of the most valuable abstractions in Computer Science. An algorithm represents the constructive solution for a class of problems and, in turn, is itself represented by a program in software (Loos & Fachbereich, 1976). The additional level of representation of the solution is at the same time a level of abstraction from the program and its realization in a computer. An algorithm of language is more than a formal specification of a computable function; it defines actions and the order, in which the actions are to be performed in a percentage result of text. In this case, there are three language features which called by algorithm language and it performs in LIWC software (Pennebaker & Lay, 2002; Groom & Pennebaker, 2002; Pennebaker, Boyd, Jordan, & Blackburn, 1983; Boyd & Pennebaker, 2017)

Language is a network system that allows its user to make choices for the realization of their intended meaning. In every part of the world, language is used to serve the dominant ideology present in that particular society. For instance, politicians can give a well-organized public speech to deceive common people. According to Khany & Hamzelou (2014), in order to win favourite responses, everyone is cautious in choosing appropriate sentence

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<sup>1</sup>English Department, University of Ahmad Dahlan, Yogyakarta, Indonesia, dwiudad@gmail.com.

<sup>2</sup> Faculty of Applied Science and Technology, Universiti Tun Hussein Onn Malaysia, Malaysia, sigitteduh89@gmail.com.

structure and vocabulary. In spite of their unique positions, politicians are no exceptions. Speech-makers have well expertise of language handling skills to convince the public to accept and support related policies. However, a thorough rhetorical move analysis of their written form, can interpret the pattern through which people get addicted to take the preferred mind set. On the other hand, algorithms of language aims at denaturalizing hidden abusive power relations and ideological processes embedded in the text.

In addition to uncovering discursive and hidden means of mental control, it also plays a crucial role in awakening people who contribute in arranging the speech text of Indonesian president. Furthermore, speaker role classification or analysis is a tool for improving the controlling of these huge mass of speech documents, and is a basis for story segmentation, for abstracting speech documents, extracting high-level information in an indexing purpose and for a more effective access to data content. Li et al., (2017) presented speaker role classification refers to classifying all utterances of the same role of speakers in a speech document and assigning a unique label of speaker role to them. Generally speaking, there are several speaker roles in different multi-participant conversational speech and one role consists of one speaker or many speakers.

Some previous studies have tackled the analyses Capone (2010) Barack Obama's South Carolina Speech from a particular pragmatic perspective basing his argument on Okada (2010) notion of footing and Biria & Mohammadi (2012) notion of polyphony. Obama takes seriously the politician's role as representative (of the people) and expresses the voices he wants to represent in order to support his ideas about politics, in respect to which he presents himself as the animator, while giving ordinary people the role of principals. Both the speaker and the hearers participate in the construction of meaning. When he voices an idea, he does not just interpretation it as if it came from himself, but gets another person (fictitious or, plausibly, real) to voice it. Since in an electoral speech, he cannot reasonably get people on stage to voice his ideas, he personifies ideas by narrating what people told him.

On the other hand, previous research found that people have differences in communication styles influenced by different cultures (Sanchez-Burks et al., 2003). Indonesia itself consists of various ethnic groups, which will also affect one's communication style. Based on cultural differences there are terms of low-context and high-context. Explicit messages are used by people from low context cultures, they pay less attention to information that lies behind communication (contextual), while people from high context cultures do not depend on direct information and pay more attention to contextual information (Hall, 1990). Communication style often uses explicit and implicit dimensions, which describe how speakers express their intentions through explicit messages or direct messages. An explicit communication style is a person who speaks directly expresses his feelings, intentions, and desires, while an implicit communication style is a person who speaks verbally with camouflage and conceals his true intentions (Gudykunst et al., 1988). The domain of communication competence is in human cognitive, but it appears in one's skills in verbal and nonverbal communication expressions, and the process of human cognitive products is demonstrated through the use of these skills. The internal processing mechanism of communication messages occurs in cognitive intelligence while the cognitive domain includes communicative behavior.

### *Speech features extraction and statistical analysis*

The emotional information in the speech signal is an important source of information. Studies of emotional speech have shown that emotion change can be associated with changes in the prosodic and spectral characteristics

of speech signals (Bulut, Narayanan, Syrdal, & Park, 2002; Murtaza Bulut et al., 2005; Burkhardt & Sendlmeier, 2000) the same word, because of the variation in speaker's emotion, may have even greater variation in their speech features.

The collection and extraction of speech features is a key step in speech recognition (Esposito & Esposito, 2012; Liu & Pell, 2012). A method of speech sample collection in a natural condition is very important for assessment of acoustic features. To date, the common methods of collecting speech samples have been structured, primarily reading a specified article, which is more stylized and mechanized, and may introduce a deviation and artificial nature to the true quality of speech. Theoretically, it should be possible to recognize speech directly from the digitized waveform. However, because of the large variability of the speech signal, it is better to perform some feature extraction that would reduce that variability. Particularly, eliminating various source of information, such as whether the sound is voiced or unvoiced and, if voiced, it eliminates the effect of the periodicity or pitch, amplitude of excitation signal and fundamental frequency etc.

Speech acts, in order to be effective, have to be situated. That is to say, they both rely on, and actively create, the situation in which they are realized. Thus, a situated speech act comes close to what has been called a speech event in ethnographic and anthropological studies (Bauman et al., 1974): speech as centred on an institutionalized social activity of a certain kind, such as teaching, visiting a doctor's office, participating in a tea-ceremony, and so on. In all such activities, speech is, in a way, prescribed: only certain utterances can be expected and will thus be acceptable; conversely, the participants in the situation, by their acceptance of their own and others' utterances, establish and reaffirm the social situation in which the utterances are uttered and in which they find themselves as utterers (Mey, 2001).

## II. ALGORITHMS OF LANGUAGE

### *Analytical Thinking*

In this paper, I shall analyse the speech of President Joko Widodo from a particular algorithms perspective. In particular, I shall explore the idea that this speech is constituted by many voices and that the audience is part of this speech event, adding and contributing to its text in a collaborative way (in particular, in constructing meaning). As many are aware (including the journalists who report day by day in news.liputan6.com), Joko Widodo uses the technique of 'personification'. When he voices an idea, he does not just expose it as if it came from himself, but gets another person (fictitious or, plausibly, real) to voice it. Since, in an electoral speech, he cannot reasonably get people on stage to voice his ideas, he personifies ideas by narrating what people told him. His stories are his way of personifying his ideas. The discourse strategy he uses serves to reverse the direction of influence from the people in control to the people controlled (see Teun A. van Dijk, 1995; T. A. van Dijk, 1993).

### *Clout*

Self-confidence or Clout is extremely important in almost every aspect of our lives, yet so many people struggle to find it. On the other hand, you might be persuaded by someone who speaks clearly, who holds his or her head high, who answers questions assuredly, and who readily admits when he or she does not know something. Confident people inspire confidence in others: their audience, their peers, their bosses, their customers, and their friends. And gaining the confidence of others is one of the key ways in which a self-confident person finds success.

In the case of a state speech, it is the audience that in part establishes the meaning of what is said, and that the speaker's intention somehow coincides with that of the audience. It is confirmed by what Biria & Mohammadi (2012) says about the main speaker being both the animator (the sounding box) and the author/principal of his speech. In the same vein, still in accordance with Biria & Mohammadi, Pennebaker (2011) points out that the audience could very well be the "principal" in the sense that the main speaker speaks on its behalf; that is, the speaker speaks in the name of "we", not "I".

After all, to win an attention from the audiences, a speaker must become the representative of a community of people (an aggregate of social groups), and to become such a representative one must show/prove that one's voice is the voice of the nation, or at least expresses the voice(s) of the nation. This is at the heart of Jokowi's argumentative strategy. The structure of his speech proves that he has a right to become a representative of the people, the people's president, as he is able to express the various voices which constitute the people.

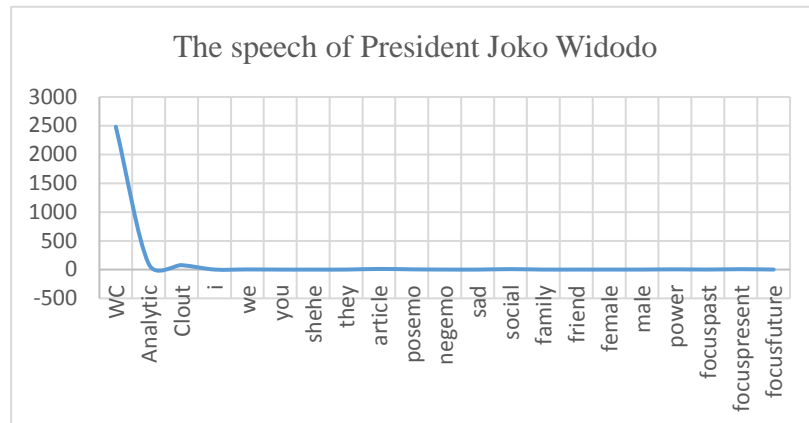
### *Authentic*

Much like the content of positive psychology, interest in authenticity and its perceived importance to well-being has existed for centuries (Kernis & Goldman, 2006; Wood, Linley, Maltby, Baliousis, & Joseph, 2008). Currently, in mainstream counselling psychology, authenticity is viewed as the most fundamental aspect of well-being in that it is not just a component or prerequisite to achieve well-being but that it is the very essence of well-being (Wood et al., 2008).

It is thought that the lack of authenticity leads to psychopathology and distress because it causes people to engage in forced, unnatural behaviour, leaving them feeling unfulfilled or devalued. Following from this, it is believed that promoting authenticity may lead to enhanced well-being because it helps people have a clear and consistent sense of self, causing fulfilment (Rogers, 1961; Reich, Kessel, & Bernieri, 2013).

## **III. METHOD**

Linguistic Inquiry and Word Count (LIWC) is a simple software that identifies the language of a target text by counting the words in the document with the list of words that exist in the vocabulary of any set of available languages. Basically, it reads certain texts and calculates the words into percentage that reflect emotions, thinking styles, social problems, and the different parts of the conversation. Because LIWC is developed by researchers who have an interest in social, medical, health, and cognitive psychology, the language category was created to capture the social and psychological state of society (Tausczik & Pennebaker, 2010). The data collected are based on the speech by the President of Republic Indonesia, "Joko Widodo" on August, 2017 which published in the internet.

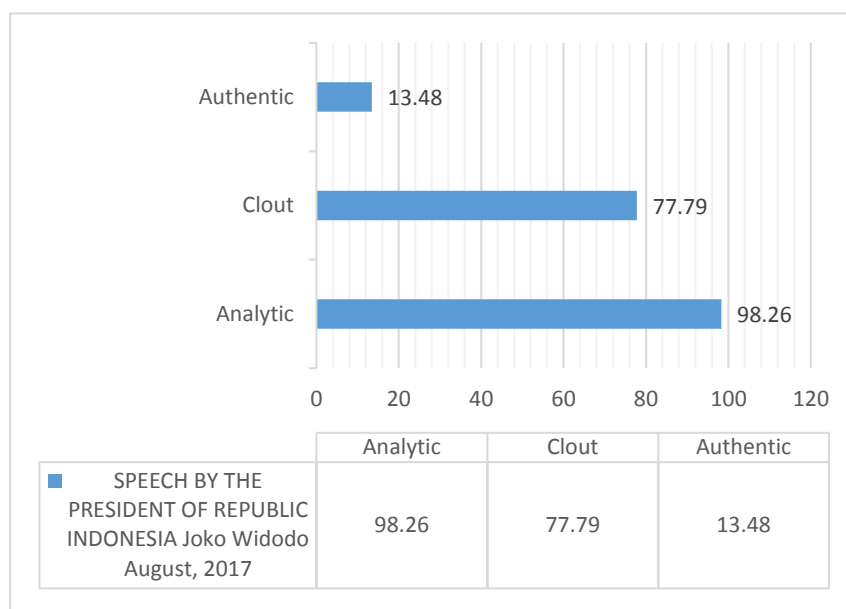


**Figure 1:** The Extraction of Data

Figure 1 presents words count that most represented from the script of president’s speech. The resource text has been counted and was pre-processing, in which the extracted text is cleaned by removing punctuations, numbers, common words, etc. And focused on three features keys (algorithms language); *Analytical Thinking*, *Clout*, and *Authentic* in order to identify the language used by the president speech processing. Even though any appear words from others features generally reflect what might be shown from the three features.

#### IV. FINDINGS

Because the speech sample in this paper was derived from the first language resource (Indonesia) — it was important to first determine whether any of linguistic features. Coding, deleting, and so on were conducted for the processing preliminary data.



**Figure 2:** Percentage of Linguistics Features

As shown in Figure 2, the linguistic features of Analytical Thinking, Clout, and Authentic. He used language more like that of a high number reflects formal, logical, and hierarchical thinking ( $\Sigma = 98.26\%$  of *Analytical Thinking*); he used language more like that of a high number suggests of the speaker is speaking from the perspective of high expertise and is confident ( $\Sigma = 77.79\%$  of *Clout*); and the language was less presidential and more guarded, distanced from the discourse ( $\Sigma = 13.48\%$  of *Authentic*). There was significant differences were found of the language features (e.g., differences between analytic and clout).

## V. DECLINE IN ANALYTIC THINKING

After several years in the office, Joko Widodo gave his state speech to the Congress. The content of Jokowi's speech was similar to common president's speeches with a focus on recent accomplishments and plans for the upcoming year. But what about the style of the speech?

Communication style can be understood as a series of ways someone behaves with other people who are specialized in a particular situation. Style can be understood as the use of words or verbal and nonverbal which can be in the form of body language, vocals, use of space, use of time and distance (Widjaja, 2000: 57). While communication styles that can be used as indifference are as follows (Hariyana, 2009: 14-18): 1) The Controlling Style, communicators have a tendency to communicate with the nature of controlling, with a view to regulating the thoughts, responsiveness, and behavior of others. 2) The Equalitarian Style, communicators openly communicate so that there is a two-way interaction between the sender and receiver of the message, this communication style is marked by a common ground. 3) The Structuring Style, communicators convey messages with the intention that something that has been structured can be carried out in accordance with existing provisions. 4) The Dynamic Style, the communicator conveys a message so that something can be done more effectively and quickly. 5) The Relinquishing Style, the communicator conveys a message to the recipient of the message who has extensive knowledge so that the communicator can accept ideas or feedback received. 6) The Withdrawal Style, communicators have problems or difficulties in communicating between individuals, so they tend not to want to communicate.

Unlike his inaugural speech which was linguistically similar to previous typical language, his recent speech was more analytic and clout but less authentic than normal. Similar to the previous president's speech, Jokowi's speech was heavily shaped by a speechwriter. Despite a speechwriter's probable role in the speech, Jokowi's latest speech is useful in understanding overall trends in the presidency and where Jokowi fits in.

The decline in analytic thinking signals a shift in how presidents are thinking about problems and presenting their ideas. Jokowi, like other recent presidents, laid out his ideas in a simpler, more straightforward way than past presidents. Going forward, Jokowi will likely rely more and more on offering simple, intuitive solutions and ideas to the problems he faces.

In a critical way of thinking an understanding of discourse is how language is used in social practice. Understanding discourse must be understood as a unity of three dimensions that discuss the discourse itself; social cultural discourse, texts and practices (Jufri, 2008: 22). The dimensions of the text include spoken and written language, the dimensions of discourse practice related to how to produce and interpret texts, and the dimensions

of socio-cultural practices related to changes in social aspects of society, institutions, and cultural systems that apply, these three things also provide direction in how the shape and meaning of a discourse.

## **VI. RISE IN CONFIDENCE/CLOUT**

The language use of the presidents can show how confident and self-certain they are as leaders. Confidence or clout is indicated by more we-words and social words and fewer I-words, negations (e.g. no, not), and swear words. The reference word in the speech used by Joko Widodo is usually in the form of pronouns. In the research data collected, the president very rarely uses the original name of the intended person. He usually only uses the name of the person's position. The president did not mention the real name of the person. These forms are referral words or pronouns as one component in the coherence of speech discourse.

Whereas analytic thinking has decreased over the last century, clout has increased. Around the same time presidents began becoming less analytic, they also started to exude more confidence. Presidents have increasingly approached these speeches to Congress with confidence and certainty. Jokowi is the most confident so far, but is still similar to recent presidents. Jokowi and other modern presidents are decisive and confident in their plans and proposals.

A study of communication competencies by Choon (2004) found that communication competencies have three dimensions: self-confidence, self-image, and respect-relational. Asma (1996) previously recommended that Malay leaders were expected to be role models of their behavior based on the religious and cultural values of their subordinates, in an effort to win their hearts and minds. It can be said that the appropriateness of communication competence is based on contextual, situational, and cultural boundaries. The issue of proper communicative behavior differs from one situation to another. However, how well a person can use abilities in different contexts or situations will influence the appropriate behavior.

Joko Widodo appearing as president was considered more confident, strong, and decisive. Jokowi's confident appearance can be interpreted in various ways, depending on the taste of the viewing subject. Some people can see Jokowi's confidence is a reflection of a firm attitude, seen from the use of the word 'must' that is scattered in his speech. But others may judge Jokowi as authoritarian. Jokowi's style is seen as a combination of persuasive models and instructive models. That is the style of a full president. Jokowi appeared to position himself as the people's choice.

## **VII. LOWER AUTHENTIC**

In general speech, presidents have been becoming more confident and analytic but less of authentic (distanced form of discourse). These trends show that presidents are changing how they are thinking and interacting with lawmakers and the Indonesian people. Faced with complex, hard-to-solve problems, clear and easy solutions are likely more appealing to present to an increasingly polarized speech.

While Jokowi is often seen as a significant departure from presidential norms, in many ways, he isn't all that different than other modern presidents. Rather than being an extreme outlier, Jokowi is part of long-term trends. He is a more confident, intuitive thinker, but SBY and Soekarno were as well. The content of what Jokowi is saying may be abnormal and more guarded, distanced form of discourse, but the style is typical of recent presidents.

In several media in Indonesia, Jokowi is said to be inclined to use the good news model, which is that the image of President Jokowi is an intelligent figure, has a high commitment to follow procedures, and has a cautious attitude in deciding the problem is a series of images raised by the media. In general, the image raised is a positive image and tends to benefit President Jokowi.

For example, on several occasions, Jokowi was seen holding paper, tidying paper, and looking at eye contact, Jokowi maintained his attitude and relied on his emotions to remain cautious. Jokowi also really keeps the euphoria from appearing, he maintains that in the context of 'my emotions are controlled' this is indeed a cautious attitude and needs consideration.

## VIII. DISCUSSION

Post-Reform Indonesia led by 5 (five) Presidents, namely BJ. Habibie, Abdurrahman Wahid, Megawati Soekarno Putri, Susilo Bambang Yudhoyono (SBY) and Joko Widodo. Each President has a unique pattern of political communication in addressing public policy issues. The difference is influenced by the leadership style of each President. Political Communication broadly means the delivery of political messages from the communicator to the communicant to achieve the political goals desired by the messenger.

The analytical thinking variable is a factor-analytically derived dimension based on eight function word dimensions. Originally published as the categorical dynamic index, or the dimension captures the degree to which people use words that suggest formal, logical, and hierarchical thinking patterns. People low in analytical thinking tend to write and think using language that is more narrative ways, focusing on the here-and-now, and personal experiences. Those high in analytical thinking perform better in college and have higher College Board scores. To learn more about analytical thinking, see (Chung & Pennebaker, 2015; Amer, 2005)

Clout refers to the relative social status, confidence, or leadership that people display through their writing or talking. The algorithm was developed based on the results from a series of studies where people were interacting with one another (Kacewicz, Pennebaker, Davis, Jeon, & Graesser, 2013). Note that Clout is different from the LIWC2015 Power variable. Power or, more accurately, need for power, reflects people's attention to or awareness of relative status in a social setting. You can have a confident leader who has no interest in other people's standing in the social hierarchy. Jokowi has a high curiosity which makes him not hesitate to conduct surveys, observations or just visits. In addition he is also able to provide ideas that he has related to a matter and expressed to the public (assertive). On the other hand the president also has an agreeableness nature as evidenced by his ability to provide initiative solutions to the problems he encounters in the field as well as the ability to find solutions that are mutually beneficial to various parties. And the most important thing is that the President also has the nature of conscientiousness, where he has high optimism and conviction for high achievements, this he also maximizes by motivating other parties to be able to work together to meet the achievements he hopes. We can generally see this when President Joko Widodo visits certain agendas

The last, when people reveal themselves in an authentic or honest way, they are more personal, humble, and vulnerable. The algorithm for Authenticity was derived from a series of studies where people were induced to be honest or deceptive (Newman, Pennebaker, Berry, & Richards, 2003) as well as a summary of deception studies published in the years afterwards (Pennebaker, 2011).



The results obtained are associated with the characteristics of Jokowi's communication style, it was found that the communication style that is often used by Jokowi is a communication style that is controlling (controlling style). It can be understood that as president in policy making in various situations the situation of Jokowi must be able to control the situation, where it is manifested in communication. However, in addition to controlling style, Jokowi also uses another communication style that is dynamic (dynamic style), in the use of this style Jokowi can change the type of use of words in his statement by taking into account the situation and conditions, for example statements that originally started with words joking words turn to the use of formal words. Other communication styles are used types that are willing to accept the suggestions or ideas of others (relinquishing style), this type allows Jokowi to communicate his policy based on consideration or input from people around him, also communication style is the basis of equality (egalitarian style) where Jokowi gives other people opportunities to replace it in the opportunity to communicate. The communication style that is also used by Jokowi is the type of unwillingness or unwillingness to communicate (withdrawal style). This communication style is used when Jokowi has to respond to policies that he has not yet been able to resolve.

## **IX. CONCLUSION**

This paper has presented Indonesian President Joko Widodo's speech from the perspective of algorithms language. In particular, I've explored the idea that this speech is constructed by analytical thinking, clout, and authentic. The algorithm's features workings are explained on the desk of language perspective.

The decline in analytic thinking signals a shift in how presidents are thinking about problems and presenting their ideas. Jokowi, like other recent presidents, laid out his ideas in a simpler, more straightforward way than past presidents. Going forward, Jokowi will likely rely more and more on offering simple, intuitive solutions and ideas to the problems he faces. Besides, the language use of the presidents can show how confident and self-certain they are as leaders. Jokowi president is decisive and confident in his plans and proposals. But on the other hands, the content of what Jokowi is saying may be abnormal and more guarded, distanced form of discourse, but the style is typical of recent presidents. Particularly, the findings can be used both for applied linguists interested in discourse Analysis and language practitioner interested in the use of critical discourse approaches to the analysis of speaking skill.

Based on the above discussion it can be concluded that the characteristics of Jokowi's communication style in policy making in general are the controlling style (controlling style), although in some situations also use the communication style in accordance with existing conditions, such as dynamic communication style (dynamic style), accepting suggestions or other people's opinions (relinquishing style), there is a common ground for communication (egalitarian style) and there is also no willingness to communicate (withdrawal style). Based on an analysis of Jokowi's communication in presenting his policy, Jokowi has communication competencies which include aspects of commitment and confidence, empathy, flexibility, sensibility consequences, and skills

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