Climate Change from the Political and Scientific Perspectives: A Critical Discourse Analysis

Sarah Hazim Mohammed   **Hashim Aliwy Mohammed Alhusseini (Ph.D)**
MA Candidate at Department of English,   Asst. Prof. at Department of English
College of Education, University of Wasit, Iraq
sarahhazim123@gmail.com   alhili.usm@gmail.com

ABSTRACT

   Being one of the most global challenges, climate change has been the concern of many international conferences. It is believed that the politicians' perspectives of climate change are different from the scientists' perspectives. This study attempts to fill in this gap through employing the textual and the ideological analyses to investigate the political and the scientific speeches about climate change. It aims at: investigating the textual features of the political and the scientific climate change discourses, examining the ideologies behind the presidents' and the scientists' speeches and shedding light on the differences between the political and the scientific discourse on climate change. The study employs a qualitative analysis by utilizing Fairclough's three dimensional framework (2001) as a tool to analyse two representative political and scientific speeches. The ideological analysis of the political and the scientific discourse shows that the former is mainly concerned with giving a bright image of the country of the speaker, whereas the latter emphasises on facilitating the perception of such a complex notion as climate change and everyone could contribute in taking action against global warming. Finally, it is shown that the scientists do not deviate the genre of climate change discourse, whereas the presidents go beyond this genre to talk about terrorism and immigration.

Keywords: climate change, politics, ideology, Fairclough's framework, discourse

التغير المناخي من المنظور السياسي والعلمي: تحليل الخطاب النقدي

المستخلص:

يُعتبر التغير المناخي أحد أكثر التحديات العالمية التي استرعت الاهتمام ونوقشت في العديد من المؤتمرات الدولية. ويُعتقد أن وجهات نظر السياسيين في تناول مشكلة التغير المناخي تختلف عن وجهات نظر العلماء في هذا المجال. لذا تحاول هذه الدراسة دراسة سد هذه الفجوة من خلال استخدام التحليلات النصية والأيديولوجية والبحث في بعض من الخطب الرئاسية والعلمية حول ظاهرة التغير المناخي. يهدف هذا البحث إلى ما يلي: دراسة السمات النصية للخطابات الرئاسية والعلمية بشأن ظاهرة التغير المناخي ، دراسة الأيديولوجيات المستخدمة في خطابات الرؤساء والعلماء ، وإلقاء الضوء على الاختلافات الحاصلة بين الخطابات السياسية والعلمية بشأن التغير المناخي. تستخدم الدراسة تحليلًا نوعيًا من خلال استخدام إطار عمل Fairclough ثلاثي الأبعاد (٢٠٠١) كأداة لتحليل اثنين من الخطب السياسية والعلمية التمثيلية. يوضح التحليل الإيديولوجي للخطاب السياسي والعلمي أن الأول يهتم بشكل أساسي بإعطاء صورة مشرقة عن بلد المتحدث ، في حين يركز الأخير على تسهيل تصور لمفهوم معقد مثل تغير المناخ ويمكن للجميع المساهمة في اتخاذ إجراءات ضد ظاهرة الاحتباس الحراري. أخيرًا ، يتضح أن العلماء لا يحيدون عن نوع الخطاب الخاص بتغير المناخ ، بينما يتجاوز الرؤساء هذا النوع للحديث عن الإرهاب والهجرة.

1. Introduction

Climate change is a controversial problem that faces the world and threatens the nation's life. This issue is being raised in global events, meetings, and conferences made by international organisations such as the United Nations (henceforth UN). These events are usually attended by representatives of the states to show their interest in this problem and how it is necessary to play a role in controlling the effects of the climate change on the environment and human being. The representatives are presidents, prime ministers and chancellors. Thus, they give high level speeches about the suitable solutions to solve such a problem. These speeches reflect their policies for the future in accordance with the climate agreements that are made and updated from time to time.

Communicating climate change is complex; and persuasion with the necessity of taking action against its destructive impacts cannot be gained easily (Pongiglione, 2012; Silden, 2017). Studies on climate change discourse have not adopted the critical perspective to investigate the persuasion in this kind of discourse. The ideologies that are revealed through the political discourse differ from those of the scientific one, though they both tackle the same problem which is climate change and its impacts. The notion of power in discourse is established differently in each kind of discourse (political and scientific). In this regard, this study attempts to focus not only on the contents or themes of the climate change speeches but also on the lexical and pragmatic meanings that are involved within the language of these representatives.

2. Literature Review

. The phenomenon of climate change has been discussed by different international and scientific institutions. The UN's Intergovernmental Panel on Climate Change (henceforth IPCC) is one of these institutions which has viewed climate change as:

Climate Change refers to the change of the state of climate that can be identified (by using statistical tests) by changes in the means and the variability of its properties, and that persists for an extended period, typically decade or longer. It refers to any change in the climate over time, whether due to natural variability or as a result of human activity (IPCC, 2007 p. 7).

Before dealing with critical discourse analysis (henceforth CDA) in details, it is important to have a look at the difference between text and discourse, since the latter is a keyword in the phrase CDA. 'Text" is a particular utterance, writing or image, while 'discourse' is a form of knowledge, and a field that demarcates specific expression. According to Michel Foucault (1973), the use of language is framed by conventions and principles that restrict people knowledge of the things around them and their meanings. Accordingly, discourse is a field that constructs social relations, performances and attitude (Littlejohn & Foss, 2009).

What makes this arena of analysis (CDA) distinctive from the other approaches of discourse analysis is the word 'critical'. The implication of this word is that it reveals the relations and the causes that are hidden beyond the discourse (Fairclough, 1992). CDA is critical, since it takes an obvious attitudes towards the investigation of the ideologies that are hidden beyond discourse (Rogers, 2011). It is stated that CDA is originally the traditional

linguistic perspective that brings linguistics with social and critical studies in one analytical phenomenon (Chouliaraki & Fairclough, 2007).

Van Dijk (1993) defined CDA as "a perspective on doing linguistics, semiotics and discourse analysis" (p. 131). Fairclough (1993a) stated that CDA is a kind of discourse analysis that attempts to uncover the ambiguous relations of causality and limitations between the discursive performances and social relations and processes. This systematic study aims at investigating the way in which these performances are framed ideologically by power relations, and the fighting against this power.

CDA attempts to uncover the connections between discourse structure and power structure (Van Dijk, 1993b). According to Wodak and Meyer (2001), CDA tries to criticize social inequality that is constructed through language use. It helps to indicate the discursive perspective of the abuse of power which in turn leads to inequality (Flowerdew, LI & Tran, 2002). CDA attempts to investigate discourse in specific context and studies the intertextual properties of that discourse in order to examine the connections between creative and conventional use of language (Wodak, 1996). CDA deals with the ideological and political incentives that are gained from discourse. Consequently, the methodologies that are adopted in CDA studies are a combination of linguistics, politics, history, sociology, and psychology (Charteris Black, 2004). Stibbe (2015) stated that CDA studies attempt to examine the way in which different groups in the society employ the grammatical and vocabulary choices to deal with different issues in the world. He noted that such linguistic features help to expose particular ideologies.

Van Dijk considered CDA as multidisciplinary methodology which tackles discourse in relation to societal issues and problems. Such a methodology requires dealing with various issues including power, social cognition, politics, cultures, ideology, etc. He stated that in order to serve the powerful groups` interests, ideology and power are constructed and institutionalized skillfully to manipulate the minds of the audience (Van Dijk, 2001).

To illustrate the interdisciplinary perspective of CDA, Van Leeuwen (2005) proposed that there are three models of CDA: 'integrationist', 'pluralist' and 'centralist'. He stated that these models are approaches with historical background and development; they are not freely used in accordance with the researcher`s desire and need.

According to Wodak (2001), CDA is an interdisciplinary field, since it is associated with various fields whose main concern is discourse, such as pragmatics, ethnography of speaking, semiotics, psycholinguistics, sociolinguistics, discourse studies and conversational analysis (Van Dijk, 2007; Wodak, 2008). CDA is different from discourse studies in that it deals with complex phenomena of social issues. Thus CDA needs to be tackled by multi methodological approaches. The common misunderstanding of CDA is that it tackles serious, negative, and problematic issues. This belongs to the misperception of the word critical which has a denotation of negativity. The usage of discourse or text has been a controversial issue in many discourse studies; it has been emphasized by Wodak and Meyer.

Political discourse is regarded as a part of discourse whose features are thematic sense and functionality. It is functional, since it contributes in

political aims` fulfillments. It is thematic since it is mainly related to political issues, notions and activities (Schaffner, 1997).

Ideology is defined as an overlapping set of thoughts that construct the unique perspective of social group. Consequently, it is a reflection of the relationship between the individuals and the real conditions of their existence (Wareing, 2004; Fasold & Connor-Linton, 2006). Ideologies are manifested in social memory as a sort of group schema that leads to the identification of group (Van Dijk, 2000b).

Power and solidarity are essential notions in ideological discourse analysis. Language plays an essential role in the creation of power; ideologies are mainly manifested in peaks of struggle over power. Inasmuch, hegemony and the dominance of power are the most important issues in ideological discourse analysis (Kendar, 1987; Fairclough, 1989; Jones & Peccei, 2004).

3. Research Methodology

The present study employs the qualitative data analysis in investigating the selected texts. Krippendorff (2019) pointed out that qualitative method is preferable because it tends to focus on how particular propositions and ideas are represented and it helps to discover and reveal the ideologies that are hidden under overt propositions. In this regard, Green and Thorogood (2004) stated that "the most basic way of characterizing qualitative studies is that those aims are generally to seek answers to questions about the 'what', 'how' or 'why' of a phenomenon, rather than questions about 'how many' or 'how much'".

Concerning the sampled texts which include two representative texts, they were downloaded from the official websites. The first text includes the

speech of the president of China which was downloaded from the official website of the United Nations Framework Convention on Climate Change (UNFCCC). The second text represents the speech of the climatologist, Judith Curry, which was downloaded from her official website. These websites are, www.unfccc.int and curry@eas.gatech.edu, respectively.

The political speech was given by the president of China, Xi Jinping. It was delivered in COP21. It contained the plans of China to fight climate change, since China is the largest emitter of greenhouse gases. The scientific speech was given by the American environmentalist Judith Curry. She represented the US committee of Science, Space and Technology in the UN assembly in 2015. This speech was downloaded from her official website.

There are various approaches that are convenient to CDA studies, but the followed approach in this study is that of Fairclough (2001). Fairclough (2003) stated that textual analysis is not sufficient for the critical studies, so it is necessary to take into account the two other stages of interpretation and explanation to uncover the ideologies and the effectiveness of power relations in discourse..

The researchers used the pronouns, vocabulary and text structure to deal with in the description stage. Concerning the personal pronouns, they have several critical functions.   'I' and 'me' are used when the speaker intends to exclude others from a given point of view. The use of these pronouns reveals the commitment of the speaker and gives him/her an obvious personal voice. Subjective speech makes the speaker responsible of what's uttered. Excluding others reflects that the speaker is in a power position (Jensen, Jakobsen & Pichler, 2016).

The use of 'we' and 'us', from the critical perspective, is an indication of that the spokesman owns the authority to speak for the others and for their behalf. These pronouns can also be used to establish the solidarity between the speaker and the addressee(s) (Maybin Mercer & Hewing, 2007).

Fairclough (1989) indicated that the ideological contested words are the essential focus of ' the ideological struggle'. Fairclough (1995) stated that the terms used in a discourse reflect how the speaker experiences the natural and the social world. Before moving to another component in the descriptive stage, it is important to give a brief definition of denotative and connotative meaning which is the main concern in investigating vocabulary in Fairclough's approach of CDA. Crystal (1997) defined the denotative meaning as the objective relationship which exists between the word and the real world to which it refers. Thus, the denotative meaning can be said to be the dictionary meaning of words, without any associative meaning. Leech (1996) defined the connotative meaning as the type of meaning that makes the word communicatively powerful. In other words, it is the associated meaning that is attributed to the words in accordance with what its referent is.

According to Fairclough's framework, the other descriptive component in the analysis of text is text structure. Fairclough (1989) described the text structure as the construction of the text in an expected order.

The interpretation stage is concerned with investigating the situational context and intertextuality. The situational context answers four questions. Firstly, it examines what's going on by tackling the contents, the purpose and the type of the activity. Secondly, it aims at answering who involved by

referring to the subject of situation. Thirdly, it examines the relations between participants or as Fairclough named it 'power relation', i.e., the relations that are introduced and raised in a particular speech event. Lastly, it investigates the role of language in that event by matching the text to the situation (Al-Jiburi, 2017). The term intertextuality is used by Fairclough to describe the process in which a particular text is embedded in another text (Fairclough, 2003). The references that are used by a speaker often mirror his\her stances, beliefs and ideologies (Jensen et al, 2016).

The last stage in the adopted framework is that of explanation. According to Fairclough (2001), this stage has two dimensions of concern. The first dimension views discourse as part of social struggle when the focus is on the originality, the future and the social effects of discourse. The second dimension views discourse as a result of struggle of power relation when the focus is on the purpose and the past of discourse   In accordance with this study, power can be stated to mean that it's the capacity that gained by dominant individuals or groups to instruct their political and social ideologies either explicitly or implicitly. Fairclough (1989) suggested the term ideological power to generalize one's ideologies as universal

4. Data Analysis

4.1 Analysis of Xi Jinping's Speech

This speech was delivered by the president of People republic of China in COP21. It contains the speaker's view about climate change and the solutions for this global problem. It also contains the actions that have been taken by the Chinese government to control the destructive impacts of global warming. The speech is analysed on the basis of Fairclough's three

dimensional approach for discourse analysis and Lakoff's conceptual metaphor. The following first three sections are concerned with Fairclough's framework and the fourth section deals with the CMT.

4.1.1 Description Stage

According to Fairclough's framework, the first stage in discourse analysis is that of description. In this stage, the researchers deal with text structure, the pronouns and the vocabulary as linguistic elements that help to reveal the ideologies of the speaker.

4.1.1.1 Text Structure

After greeting the audience, the speaker condemns the attacks on French people few days prior to the conference. Then, he tackles climate change and its threats and suggests the main ways to meet this challenge. Additionally, the speaker manifests the achievements of his country to deal with the problem. Finally, he offers support to the developing countries to fight climate change impacts.

4.1.1.2 Pronouns

From the grammatical component, the pronouns are investigated to expose some aspects of the speaker's ideologies and how he employs pronouns to deliver specific messages. Below are statements extracted from Xi Jinping's speech with explanation of the functions that pronouns serve.

. "We are gathering here in Paris…"

. "Our presence shows …"

'We' and **'our'** are used above to refer to the parties of the conference who took part in the event. They serve the function of inclusiveness; the speaker involves the participants in his speech. He tries to establish solidarity with the addressees.

. "Let me take this opportunity to express my sincere sympathy …"

. "I believe that …"

In the statements above, the speaker uses the person singular pronouns to show his commitment and responsibility for the matters. He tries to persuade his recipients that he is aware of the problem and to show his self-confidence.

. "We should create a future of win-win cooperation …"

. "We should create a future of law, fairness and justice."

In the above statement, the speaker uses **'we'** to refer to the decision makers around the world. He sets relation with the fellow leaders and the heads of governments of the states. The pronoun 'we' is employed for sake of inclusiveness.

4.1.1.3 Vocabulary

The choice of words reveals the ideologies of the speaker and his stance towards the issues that are tackled in in the speech.

The speaker starts his speech with the expression "Dear friends" which is associated with social relation that the president of China tries to establish with his addressees. Such expressions have a positive impact on the recipient. Then, he states that the participation in the conference is a clear message to the terrorists that they cannot prevent people from seeking better future through addressing climate change. The speaker uses words such as "efforts" and ''pursue'', whose meaning is associated with serious action and hard work, to show that it is difficult to prevent climate change. In the same paragraph, the speaker expresses his sympathy with the French people because of the terrorist attack on Paris. He states:

. "Let me take this opportunity to express my sincere sympathy with the French people (…)"

The word "sincere" reflects emphasise of the speaker to show his attitude towards the attacks.

. "Thanks to joint efforts of all parties since the United Nations Framework Convention on Climate   Change entered into force over 20 years ago,"

In the above extract, the speaker appreciates the efforts of holding the conference. This means that it is a valuable and important event. He generalizes his appreciation to the efforts of taking action to address climate change and refers to the UN action in the early nineties as the starting point for those efforts.

. "global actions on climate change have made progress …"

The meaning of the word **"progress"** is associated with positivity. The statement reveals the positive viewpoint of the speaker towards the actions that have been made for decades to address global warming.

. "This Paris Conference is hence convened to strengthen implementation of the UNFCCC and bring about a comprehensive, balanced, ambitious and binding agreement on climate change. "

The above statement is an instance of the positive representation of the event and its valuable aims. The word **'strengthen'** shows the value of the conference. After that, the speaker presents the features of the Intended agreement. He proposes that it should be comprehensive which means that the agreement should involves all countries around the globe. The second feature is that of being balanced which means equal and fair. The last feature he proposes is that of being binding which means forceful and have power among the participants to fulfil their commitments. In the same paragraph, the speaker goes on presenting the valuable aims of the event. He

optimistically refers to the outcomes as effective and reasonable solutions for the problem of climate change. He states:

.   "The conference is also expected to come up with equitable, reasonable and effective global solutions   to climate change and explore pathways (…)" all parties making joint efforts with sincerity   and confidence, the Paris Conference will yield satisfying results and meet the high expectations of the   international community."

The meaning of the words **"sincerity"** and confidence, in the above statement, is associated with seriousness and faithfulness. This means that the speaker views such features as a key to achieve success in dealing with climate change. This shows a moral perspective for taking action against climate change which effects threatens the planet.

. "…set up incentive mechanisms to encourage countries to purse green, circular and low-carbon   development."

In the above statement, the speaker describes the intended outcome of the event and he proposes that it should motivate the governments to take action. In this context, the meaning of the word **"mechanism"** gives a sense of effective plans that are put by the decision makers to face the challenge of climate change. **'Low carbon development"** means the progress that is accompanied with clean and less polluted environment, which results in safer future.

. "Developed countries should honor their commitment of mobilizing US$100 billion each year before   2020…"

The word **"honor"**, above, means that they have to implement their responsibility in supporting the developing countries. The meaning of this word is associated with moral values.

.   "It is also important that climate-friendly technologies should be transferred to developing countries to   help them build green economy."

In the above statement, the meaning of the expression **"green economy"** is associated with the economic growth that is resulted from using clean energy sources. The speaker tries to say that creating safe environment is bases on building **"green economy"**.

. "Special needs of developing countries must be well attended to."

The above statement gives a sense that developing countries are in need for more than transferring **"climate friendly technologies"** to fight global warming. They need to improve their living standards. They need financial support as well. After that they would be able to face the challenges of climate change.

. "China has been actively engaged in the global campaign on climate change. "

With the above statement, the speaker starts presenting his country's contribution in facing climate change. The word is actively employed to mean serious and remarkable action.

Then, he describes china's action as "sincere" and "determined". The meaning of these words is also associated with the seriousness of the action that has been taken. After that, the speaker uses expressions such as "low carbon growth" and clean technologies". Those expressions are employed to mean safer environment and less climate change threats.

 "China tops the world in terms of energy conservation and utilization of new and renewable energies. "

The word **"top'** is employed to reveal that China has achieved the best position in the rank of the countries who use friendly environmental energy sources. The meaning of **"renewable"** is associated with less polluted environment.

. "Chinese culture values harmony between man and nature and respects nature"'

In the statement above, the speaker uses the word **culture** that means social traditions. He highlights that protecting the environment is a part of the Chinese culture. This statement gives a sense that fighting climate change is a social issue rather than political one.

4.1.2 Interpretation Stage

The interpretation stage includes the contextual details and the intertextual expressions that are given by the speaker.

4.1.2.1 Situational Context

The subject is the president of China Xi Jinping. The discourse is about China's plans to fight climate change and how the action is a shared mission among all countries. Part of the speech is directed to the representatives of the states who took part in that event (the speaker's colleagues). The other part involves the Chinese government and population. The relation between the speaker and the addressees is that of politics and society.

4.1.2.2 Intertextuality

This strategy is used by the speaker many times throughout his discourse. Below are examples of using intertextuality and the functions they are used for.

. "The French writer Victor Hugo once observed in *Les Miserable* that "supreme resources spring from extreme resolutions "

The speaker quotes the above statement in order to persuade the audience with the necessity of taking action against climate change.

. "The agreement should follow the principles and rules set out in the UNFCCC"

The reference to "UNFCCC" is employed for the sake of persuasion. Xi Jinping tries to highlight the significance of the UN efforts to reduce the impacts of climate change.

. "a take-more-give-less approach based on expediency is in nobody's interest. The Paris Conference
should reject the narrow-minded mentality of "zero sum game" and call on all countries, the developed
countries in particular, to assume more shared responsibilities for win-win outcomes. "

In the above extract, the speaker presents many examples of intersexual expressions. He tries to show that achieving success in fighting global warming depends on cooperation and collective action among all countries. He refers to the notion of "win-win" to persuade his addressees with the idea that creating less polluted environment leads to save life of humanity on earth. It benefits all countries without exception.

. "Chinese agovernment has earnestly fulfilled its policy commitments of South-South cooperation regarding climate change to support developing countries,(…)"

The president of china refers back to his country's commitment in an earlier work that is concerned with supporting the developing countries to face this global challenge. It is employed for the sake of persuasion with the notion that China has actively contributed to fight climate change.

4.1.3 Explanation Stage

In this stage, the analyst investigates the ideologies that are revealed in Xi Jinping's discourse.

. "Our presence shows that terrorism cannot hold back mankind's efforts to address climate change and pursue a better future."

In the above statement, the speaker exposes his attitude towards terrorism and the significance of the event. He intends to show that terrorists try to destroy the future and fight peace in the world.

. "Thanks to joint efforts of all parties since the United Nations Framework Convention on Climate Change entered into force over 20 years ago,"

The speaker shows that he believes in importance of the shared efforts that are made to deal with climate change. His belief in the progress reveals his optimism towards the problem.

. "I believe that with all parties making joint efforts with sincerity and confidence, the Paris Conference will yield satisfying results and meet the high expectations of the international community."

It is explicitly shown that the speaker wants to emphasise the moral values of fighting climate change. He intends to show that he believes in the necessity of joint efforts and individual interests should be avoided. This positivity in discourse leads to represent the speaker and his government positively.

. "Special needs of the developing countries must be well attended to."

The above statement shows that the speaker's belief in the responsibility of policymakers to support developing countries. He intends to deliver a message that protecting the environment from climate change impacts requires improvement of living standards of those countries first. This reflects the power of the developed countries in the world.

> "the global efforts on climate change can be taken as a mirror for us to reflect on what models to have for future global governance and how to build a community of shared future for mankind. Much valuable inspiration may thus be drawn on."

The above extract shows that the speaker intends to shed light on the importance of the joint efforts that are concerned with climate change and their effectiveness on other sectors. Xi Jinping believes that these efforts are seen as evidence that the world can stands against any danger through joint action.

. "Paris Conference should reject the narrow-minded mentality of "zero sum game"(…)"

The speaker tries to say that to make progress in fighting climate change, the countries should respect the moral values of not thinking in their interests, but they have to seek the whole world's interest. This shows that the speaker views fighting global warming as moral responsibility.

. "We should create a future of the rule of law, fairness and justice"

The speaker reveals his valuation to law and justice which is a positive representation of the speaker.

. "China is both sincere and determined to contribute its share to the success of the Paris Conference.'

The above statement shows that the speaker intends to represent his country positively He tries to establish power relations when he refers to the impact of China's contribution on the success of COP21.

> China's installed capacity of renewable energy accounts for 24% of the world's total, with the newly installed capacity accounting for 42% of the global total. China tops the world in terms of energy conservation and utilization of new and renewable energies.

The above extract presents the speaker as authentic since it contains facts and numbers. It is an indication of power; Xi Jinping states that his

country is the most prosperous country. He indicates his belief that using renewable energy is the best way to prevent climate change.

. "Chinese culture values harmony between man and nature and respects nature "

The speaker tries to shed light on Chinese culture. He indicates that protecting environment is not newly emerged phenomenon, but rather it is an important part of their culture. Power is explicitly indicated; the speaker intends to deliver a message that China enhances an advanced position in the war against climate change.

China pledges to peak CO2 emissions by around 2030 and strive to achieve it as soon as possible, and by 2030, reduce CO2 per unit of GDP by 60-65% over the 2005 level, raise the share of non-fossil fuels in primary energy consumption to about 20% and increase forest stock by around 4.5 billion cubic meters over 2005.

As he presents his country's achievements and plans to deal with climate change, Xi Jinping refers to the targets they try to reach at particular times. He tries to emphasize authenticity and determination through using these percentages and that makes him persuasive and powerful. He tries to show his awareness of the problem and his belief in its urgency.

China announced in September the establishment of an RMB 20 billion South-South Climate Cooperation Fund

The above statement is an instance where the speaker intends to show power through highlighting the prosperous financial status of his country.

. "All eyes are now on Paris."

The speaker concludes his speech emphasizing the significance of the event and the issues it tackles. He is aware of the governments' responsibility

of achieving success in controlling climate change impacts. The speaker believes that they tackle an issue that affect the entire world and that provides his discourse with power.

Throughout this discourse, the speaker uses the expression " Dear Colleagues" repeatedly. This expression is employed to set social relations with the recipients.

4.2 Analysis of Judith Curry's Speech

This speech was delivered by the American climatologist Judith Curry. She gave this speech to the committee on Science, Space and Technology in the House of the Representatives in the United States. The session was held on 15th of April, 2015. Curry presented the speech to offer the testimony on the existence of climate change and its impacts on the planet. She sheds light on the recent researches on climate change and what is found out by the scientists. This speech is analysed in accordance with the adopted modal of analysis.

4.2.1 Description Stage

In the first stage of analyzing Curry's discourse, text structure, pronouns and vocabulary are investigated.

4.2.1.1 Text Structure

The speaker starts her discourse with introducing herself to the addressees. Then, she highlights some of her contributions in the field of environmental science. After that, she tackles climate change and what the researchers have found out. Curry concludes her discourse with presenting the reasons behind climate change.

4.2.1.2 Pronouns

The pronouns are used by curry in this discourse for various functions, as illustrated below.

> "I thank the Chairman and the Committee (…)". "I am Professor and former Chair of the School of Earth (…)". "My research on understanding the dynamics of uncertainty at the climate science-policy interface has led me …" . "My testimony focuses on (…)"

In the above statements, Curry uses **"I"** and "my" to indicate her personal voice. She tries to reveal her commitment for what is said. She excludes the audience to reveal her authority and confidence. She intends to persuade the addressees through highlighting the findings of her own scientific works.

. "So we have no significant temperature increase since 1998,"

The speaker rarely uses **"we"** in this speech. Curry employs the pronoun, above, to refer to the world. She involves the entire world in the above statement. It is used for sake of inclusiveness.

. "Our calculations used the same data for the effects on the Earth's energy balance(…)"

. "We can't rule out unforeseen surprises."

"We" and **"our"** are used to refer to the speaker and her partners in her research. They are employed to exclude the addressees and to indicate the commitment and the responsibility of the speaker for the facts she presents in her discourse.

4.2.1.3 Vocabulary

The choice of words in Curry's discourse indicates her emphasise on presenting persuasive scientific facts. This notion is illustrated below.

The speaker starts her discourse with presenting words such as **"testimony"**, "assessment", **"conducting"** and **"research"** which are mainly associated with scientific work. She goes on using words that are associated with an awareness of the problem. She states:

. "I am increasingly concerned that both the climate change problem and its solution have been vastly
oversimplified"

The word **"oversimplified"** indicates positivity and progress. The above statement gives a sense that fighting climate change is no longer difficult.

. '(…the U.S. and other nations will remain vulnerable to climate surprises and extreme weather events."

Curry criticizes the governments' plans in dealing with climate change. The above statement shows that these plans are not fruitful and will not make any progress in the war against climate change. She presents issues to assert the unfruitfulness of political work in regards with climate change. She names these issues as "issues of testimony". The meaning of this expression is associated with evidence to prove the fact. This provides the speech with authenticity.

. "Scientists agree that surface temperatures have increased since 1880, "

The speaker presents facts about the main causes of climate change. She refers to the general agreement among the scientists about these causes. The generalization in discourse is associated with facts and authenticity.

Curry uses words like **"central"** and **dominant"** in presenting the causes of climate change. The meaning of these words is related to emphasis and assertion. She documents her speech by referring to the international reports on climate change such as those of 2007, 2013 and 2014.

. "The IPCC AR5 notes a slowdown in surface warming since 1998:"

In the above statement, the speaker uses the word **"slowdown"** which gives a sense of less threatening impacts of climate change. Curry goes on showing positivity and refuting the claims about this decade as the warmest decade in the historical record. She states:

. "So we have no significant temperature increase since 1998, which has "

In explaining the causes of climate change, Curry emphasizes the role of natural variability. This means that climate change is not only caused by human activities, but also there are natural causes for this change. She refers to the researches that are devoted to show this fact.

Curry specifies paragraphs in her discourse to explain natural phenomena such as **"sea ice"** and **"warming hiatus"** which add more scientific facts to the discourse. She refers to the researches that are conducted to study the role of these natural issues and their conclusion.

In explaining the sea ice status, the speaker refers to **"summertime"** and **"wintertime"**. The meaning of the former is that of warming increase whereas the latter means cool and less damaged.

. "Scientists do not agree on the explanation for the increasing Antarctic sea ice extent, and the key issue   as   to   whether   human-caused warming is the dominant cause of the recent Arctic sea ice loss remains unresolved"

The above extract shows the rejection to the notion that climate change is caused by human activities alone, but rather the natural variability plays a dominant role in causing it. This provides the speech with objectivity and distances it from being biased.

. "Are climate models too sensitive to greenhouse forcing?"

In the above statement, Curry uses the expression "greenhouse forcing" which is associated detailed explanation of global warming

. "Time will tell which of these two perspectives is correct."

The speech is concluded with highlighting the role of time in determining the reasons behind climate change. This is related to objectivity that the speaker tries to demonstrate.

4.2.2 Interpretation Stage

On the basis of Judith Curry's speech, the situational context and intertextuality are investigated respectively.

4.2.2.1 Situational Context

The subject of this speech is the American climatologist Judith Curry. The speech is about climate change and its causations and impacts. It also tackles what the scientists have found out through their research in this domain. The people who are involved in this speech are the scientists of climate and the policymakers. The relation between the speaker and her addressees is that of science.

4.2.2.2 Intertextuality

This strategy is obviously used in Curry's speech. The statements that indicate this notion and the critical functions of their use are presented below.

. "Scientists agree that surface temperatures have increased since 1880. "

The speaker uses the claims of other scientists to persuade her addressees with the testimony she offers.

. "My 2014 testimony before the Senate Environmental and Public Works Committee3 argued that the 2013 report from the Intergovernmental Panel on Climate Change (IPCC AR5 WG I)4 weakened the case for dangerous anthropogenic climate change relative to the IPCC AR4 published in 2007."

"Nicholas Lewis and I published a paper10 that found transient climate response to have a *likely* range of 1.05-1.80℃."

Curry sheds light on her previous studies that are concerned with climate change to prove that she had valuable contribution in the field. She tries to say that her present testimony is a result of her previous works.

. "The media touted 2014 as the 'warmest year' in the historical record,"

. "A recent paper by Swart et al.8 emphasized that internal climate variability can mask or enhance human induced sea-ice loss on timescales ranging from years to decades or even a century."

. "A new paper by Zhang clarifies the natural fluctuations that influence Arctic sea ice loss (…)"

In the above extracts, Curry highlights different perspectives on climate change from different climate institutes around the world. She tries to

emphasise the uncertainty of the real cause of climate change and there are unforeseen issues that might happen from time to time.

4.2.3 Explanation Stage

Curry's discourse reveals her ideologies. This section is concerned with highlighting the statements that explicate these ideologies.

. "As a climate scientist, I have devoted 30 years to conducting research on a variety of topics   including climate feedback processes in the Arctic."

. "I have been working with the decision makers on climate change assessment"

At the beginning of her speech, Curry utilizes these statements to show that she is professional in the field of climate science. Such statement makes her testimony persuasive.

. " …the U.S. and other nations will remain vulnerable to climate surprises and extreme weather events."

Curry shows her belief in the failure of governments' policies to fight climate change. This indicates that scientists have the authority over the politicians in determining the appropriate mechanisms to prevent climate change.

Throughout her discourse, the speaker presents contrasting point in the conclusions of the IPCC's reports. She shows that they're not contestant in identifying the real cause behind climate change. By highlighting this notion more than once in her speech, Curry intends to indicate the appropriateness of the uncertainty perspective which is essential in her testimony.

. " Notably, Arctic sea ice volume (a metric that combines both horizontal extent and ice thickness) shows a continuing increase since 2012."

The speaker tries to show that there are scientific facts that odds with the media forecasting about climate. She intends to show that the natural variability plays an important role in increasing and decreasing climate change.

Curry presents the notion of climate sensitivity to GHG emissions. She presents this fact as evidence that human activities are not the main reason behind global warming. The amount of climate sensitivity to these emissions determines the degree of global warming. She tries to be objective in her testimony.

. "The warming hiatus, combined with assessments that the climate-model sensitivities are too high,   raises serious questions as to whether the climate-model projections of 21st century temperatures are   fit   for supporting public policy decisions:"

In the above statement, the speaker indicates her belief that the scientific works should present valuable conclusions for the public policy. These studies should support all people in living safely.

This speech contains different perspectives about climate change ant its dominant causes. Curry refers to researches that are conducted in different countries around the world such as the U S, the U K, and Russia etc. This reflects the objectivity of the speaker.

5. Conclusions

On the basis of analysed data, the researchers found out that there are many differences between the political and the scientific discourse on climate change.

The textual analysis, which is composed of the description and the interpretation stages, shows that the political speech represented by the president Xi Jinping adopts different text structure from the scientific one

represented by the scientist Judith Curry. The former starts his speech with condemning the terrorist attacks on Paris and concludes with offering support to the developing countries to fight climate change. The latter speech starts with highlighting her contributions in the environmental science and concludes with presenting the reasons behind climate change. In terms of pronouns, it is found out that the pronoun "we" is used in the presidential discourse more than the pronoun "I". This means that the president intends to show that he represents his country and tries to establish solidarity with the audience. The overt use of "I" by the scientist indicates that she intends to show commitment and responsibility for her testimony. Investigating the choice of words shows that the president chooses the word that are associated with positivity and the priority of climate change in the Chinese policy. Regarding the scientist speech, it shows that the scientist's words are associated with authenticity and objectivity; she uses numbers and percentages which provides her speech with persuasion.

Investigating intertextuality sheds light on the different reasons behind using this strategy by the politicians and the scientists. In this regard, the politicians employ intertextuality to persuade the audience that they are interested in the topic of climate change and they believe in the necessity of the collective action to face this global challenge. As for the climatologists, they use intertextuality to refer to their previous scientific works and to persuade that they presented the right observations about the future of the planet.

On the basis of the ideological analysis, it is concluded that the ideologies of the politicians differ from those of the scientists though they both deal with the problem of climate change. The president is mainly

concerned with presenting his country positively; he repeatedly highlights the achievements of his government in the war against climate change. The scientist is concerned with clarifying the notion of climate change and what the climatologists have reached in their researches. Power is established in the political discourse through indicating that the country of the speaker is the most developed country in the world. It is also established through offering support to the developing countries. In the scientific discourse, power is indicated through shedding light on the scientist's contribution in developing science and presenting the appropriate mechanisms to fight climate change.

It is worth mentioning that the president deviates the genre of climate change discourse to show his attitude towards terrorism, whereas the scientist devotes the speech to talk only about climate change and its destructive impacts.

REFERENCES

Al-Jiburi, N. (2017). *A Contrastive Critical Discourse Analysis of the Universal Declaration of Human Rights and Risalat Al-Huquq of Imam Ali Al-Sajjad (p.b.u.h.)* (Unpublished master's thesis). University of Babylon.

Charteris-Black, J. (2004). *Corpus approaches to critical metaphor analysis*. New York: Palgrave Macmillan.

Chouliaraki, L. & Fairclough, N. (2007). *Discourse in late modernity rethinking critical discourse analysis*. Edinburgh: Edinburgh University Press.

Crystal, D. (1997). *A dictionary of linguistics and phonetics*. Oxford: Blackwell.

Curry, J. (2015, December). Retrieved November 19, 2018, from https://www.americanrhetoric.com/speeches/judithcurryclimatechangecongress.htm

Fairclough, N. (1989). *Language and power*. New York: Longman.

Fairclough, N. (1992). *Discourse and social change*. Cambridge: Polity Press.

Fairclough, N. (1993). Critical Discourse Analysis and the Marketization of Public Discourse: The Universities. *Discourse & Society, 4*(2),.1177/

Fairclough, N. (1995). *Critical discourse analysis: The critical study of language*. London: Longman.

Fairclough**. N.** (2001). *Language and power*. 2nd Edition. New York: Longman.

Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research.* London and New York: Routledge.

Fasold, R. W. & Connor-Linton, J. (2006). *An introduction to language and linguistics*. Cambridge: Cambridge University Press.

Flowerdew, J., Li, D. C. & Tran, S. (2002). Discriminatory news discourse: Some Hong Kong data. *Discourse & Society, 13*(3), 319-345.

Foucault, M. (1973). *The order of things: An archaeology of the human sciences*. New York: Vintage Books.

Green, J. & Thorogood, N. (2004). Qualitative Methods for Health Research.London: SAGE Publications Ltd.

IPCC. (2007). *Climate Change 2007: Synthesis report*. Valencia, Spain.

Jensen, I. Jakobson. I. & Pichler, L. (2016). *A critical discourse study of hillary clinton's 2015/2016 presidential campaign discourses* (Unpublished master's thesis). Thesis.

Jones, J., and Peccei, J. (2004). *Language and politics*. In L. Thomas (Ed.), *Language, Society, and Power.* New York: Routledge.

Kedar, L. (1987). *Power through discourse*. Norwood, NJ: Ablex Pub.

Krippendorff, K. (2019). *Content analysis: An introduction to its methodology*(3rd ed.). Los Angeles, Calif.: Sage.

Leech, G. N. (1996). *Principles of pragmatics*. London: Longman.

Littlejohn, S. W. & Fairclough, N. (1992). *Discourse and social change*. Cambridge: Polity Press.

Maybin, J., Mercer, N., & Hewings, A. (2007). *Using English*. London: Routledge.

Pongiglione, F. (2012). The key role of causal explanation in the climate change issue. *THEORIA. An International Journal for Theory, History and Foundations of Science, 27*(2), 175-188.

Rogers, R. (2011). *An introduction to critical discourse analysis in education*. New York: Routledge.

Schäffner, C . (1997). *Analysing political speeches*. Clevedon: Multilingual Matters.

Silden, M. (2017). *Climate Change in Political Speeches* (Unpublished master's thesis).University of Oslo.

Stibbe, A. (2015). Ideologies and discourse. In A. Stibbe (Ed.), *Ecolinguistics: Language, ecology and the stories we live by* (pp. 22–45). London: Routledge.

Van Dijk, T. A. (1993a). *Elite discourse and racism. Newbury* Park, Calif.: Sage Publications.

Van Dijk, T. A. (1993b*).* Principles of critical discourse analysis. *Discourse and Society*, 4(2), 249-283.

Van Dijk, T. A. (2001). Multidisciplinary CDA: A plea for di versity. *Methods of Critical Discourse Analysis,* 95-120. doi:10.4135/9780857028020.d7

Van Dijk, T.A. (2000b). *Discourse studies: A multidisciplinary introduction*. doi:10.4135/9781446289068

Van Dijk, T.A. (2007). Discourse Studies. doi:10.4135/9781446261415

Van Leeuwen, T. V. (2005). Three models of interdisciplinarity. *A New Agenda in (Critical) Discourse Analysis Discourse Approaches to Politics, Society and Culture,* 13, 3-18.

Wareing, S. (2004). What is language and what does it do? *Language, Society and Power,* 1-16. doi:10.4324/9780203426968

Wodak, R. & Meyer, M. (2001). *Methods of critical discourse analysis*. London: Sage.

Wodak, R. (1996). *Disorders of discourse*. London: Longman.

Wodak, R. (2001). The Discourse-Historical Approach. *Methods of Critical Discourse Analysis,* 63-94.:. /

Wodak, R. (2008). Introduction: Discourse Studies — Important Concepts and Terms. *Qualitative Discourse Analysis in the Social Sciences* Wodak, R. & Meyer, M. (2009). *Methods of critical discourse analysis*. London: Sage.

Xi_jinping. (2015, December 10). Statements made during the Leaders Event. Retrieved October 2, 2018, from https://unfccc.int/process/conferences/past-conferences/paris-climate-change-conference-november-2015/statements-and-resources/statements-made-during-the-leaders-event