

A Corpus-Driven Discourse Analysis of Metaphor in Climate Change: A Preliminary Study

T R Indhiarti
Universitas Brawijaya

{tantri.refa@ub.ac.id}

Abstract. This paper calls an attention to the critical analysis of discourse in climate change with special focus on metaphorical language about how it is discussed in the media. The topic is under discussion as climate has been found changing in an extended period making it a complex issue that involves the whole earth and nature. Besides, climate change is seen as results of natural variations and human activities, and therefore it is crucial to be aware of and to find solutions to deal with it. To carry out the study, the data were obtained from British National Corpus and analysed in term of their metaphorical expressions and persuasive effects. By using model of metaphor by Lakoff and Johnson (2003), the way metaphors affect how human think and their central role in the construction of social and political reality is known. As one example of metaphors in climate change, in the expression *Climate change could lead to starvation*, the movement words such as *lead* is used to reflect particular ways of thinking about climate change either positive or negative ways.

Keywords: *Corpus Linguistics, Discourse Analysis, Metaphors, Climate Change*

1 INTRODUCTION

The climate of the earth has drastically changed leading to a considerable effect on human beings and environment. For example, climate change can result in more floods, droughts, and wildfires disturbing the ecosystems. People's health has been affected through malnutrition and diseases as well [7]. It is thus a complex issue in its nature as it includes various ecosystems and human civilization. In consequence, climate change has become an important political issue all around the globe, and an issue frequently discussed in the media. Through media, the public learns about environmental and scientific issues such as climate change.

More people put concerns on this crucial phenomenon resulting in more researches having been carried out to explore discourse on environment as represented in media. This is in line with previous works [5] and [3] which are among those writing books on the environmental discourse. The other former study [1] on the cultural circuits of climate change in UK broadsheet newspaper gives a valuable contribution in the field of social issues. The substantial attention given in those publications calls a need to investigate metaphors in climate change discourse. This is because metaphor is regarded integral to language and

thought as a way of experiencing the world [16]. In such, metaphor is far from being a mere linguistic device, but it helps to shape the way people think and [9].

It is common to make a distinction between literal and metaphorical use of a word. It is accepted that the literal use of words is the straight forward way of using them and the metaphorical use may involve tension. For example:

(1) Standing forests are a tremendous carbon storehouse.

In this case, the word storehouse is used metaphorically since forests cannot really be storehouse. The example indicates that there is a non-literality in the meaning of the word *forests* and the word to describe it namely *storehouse*. Therefore in order to determine the metaphorical use of a word, it is necessary to pay attention to word meaning in a certain context. Metaphor thus is seen as central to language, thought or cognition and our experience of the world.

The establishment of metaphor theory is contributed by Lakoff and Johnson's *Metaphors we live by* [9]. The list of linguistic expressions as evidence of conceptual metaphors is used such as *argument is war*, *time is money*, *happy is up*, *inflation is an entity*, *the mind is a brittle object*, *theories are buildings* and *ideas are plants*. The conceptual metaphor *Argument is war* is expressed in *Your claims are indefensible*, *He attacked every weak point in my argument*, *I demolished his argument*, *I've never won an argument with him*, and *He shot down all of my arguments*. Those expressions provide evidence that people understand arguments in terms of war. Therefore, the sentences are a linguistic realisation of the conceptual metaphor of *Argument is war* where argument is the target domain and war is the source domain [10].

Since metaphor is used cognitively by a speaker to invite the hearer to evaluate the speaker's intention, it has a hiding effect [9]. This effect underlines that one of the reasons that we talk about something in terms of something else is it enables us to emphasise certain aspects or qualities of that something. Accordingly, talking about something for example arguments in terms of war can possibly affect our way of thinking about arguments.

In such a case, a study [12] reports that metaphors have an ability to stir emotion as contributory to persuasion. For example, if we do not understand a certain issue and metaphor helps us to understand it, we will experience a relief from tension resulting in an enlightenment.

Works on environmental discourse pay attention to metaphor are of [15] examining the role metaphorical thought plays in the scientific and popular discussion of global warming and loss of biodiversity. Her article discusses the use of different conceptual metaphors used in the environmental discourse and how they are ideologically loaded. The other work is [5] raising the critical awareness of the way environmental matters are presented. This is important because the world is facing environmental crisis. However, these works refrain from stating what kind of methodology and criteria in identifying the metaphors. Accordingly, as little is known in metaphors within the climate change discourse, this paper is to evaluate the phenomenon as presented in one of English corpora namely British National Corpus. In this case, the linguistic metaphors are considered in the context in which they occur and also involve their classification and evaluation as part of a broader discourse perspective.

2 RESEARCH METHOD

The discourse sample of climate change investigated in this paper has been taken from British National Corpus (BNC). BNC has been created as a general language corpus which means that a lot of planning went into deciding what text types and how much of each of them should go into the corpus [14]. It is a 100million word collection of samples of written and

spoken language from a wide range of sources produced by different kinds of language users. To search or to query the data contained in the BNC, a user-friendly web-based named BNCweb is used [6]. This allows the researcher to get further information about the search results that are retrieved, such as the type of speaker or writer, the kind of context in which it is produced, etc. Therefore, a broad variety of climate change topics may be obtained and it is not limited to one particular style of texts as it includes spoken and written texts. In order to collect the articles, the clue 'climate change' was searched on the respective website [18].

In identifying the metaphors, the method used is of [9]. The steps are 1) reading the whole articles, 2) scrutinizing the articles to identify metaphor candidates, 3) determining whether the individual occurrence of metaphor candidates is metaphorical or not by examining the context. In step 3, Macmillan English Dictionary for Advanced Learners and henceforth MED [11] and to identify historically older meanings the online version of Oxford English Dictionary and henceforth OED [13] were used, and 4) determining the target domain and source domain.

3 RESULTS AND DISCUSSION

In this part, aspects of the metaphors are discussed along with their classification. That is, the classification is a presentation of the linguistic metaphors as realisations of one particular conceptual key.

3.1 The Identification of Linguistic Metaphors

In the corpus, words describing movement, such as reverse, start, stop, slow, and fast were used to describe climate change. The use of the movement words enables an analysis of what aspect of the target is highlighted in the sentences.

- 3) But concern for the vulnerability of land threatened by erosion and climate change is spread across much of the country.
- 4) Britain's wild flowers threatened by climate change...
- 5) This programme sets an example of how nations can work together now to cut emissions, but a much bigger deal is needed urgently to stop runaway climate change.
- 6) And: It could completely end human civilization, and it is rushing at us with such speed and force.

The movement words have several meaning, but if the meaning have to do with movement, it may be considered more basic meaning than that having to with for example development. In other words, as climate change is not a physical entity, a semantic tension occurs when movement words are used to describe climate change. In short, the kind of changes that climate change involves generally does not include movement, such as a rise in the global mean surface temperature or changes in precipitation patterns. On the other hand, movement involves some kind of change. Moving a leg or an arm results in a change of body position. It thus seems reasonable to assume that since change is an obligatory result of any movement, it becomes possible for human to understand change in terms of movement of the pace of climate change, runaway climate change, etc.

It is stated in [10] that 'manner of action is manner of motion' is an entailment of the event structure metaphor. Therefore, if we believe that global temperature has increased substantially, we describe climate change as 'rushing at us' as in datum 6. Moreover, if we

judge the temperature does not change substantially, we describe it as moving relatively slowly as in datum 4.

Looking at datum 5, containing the adjective runaway, it is known that the adjective has meanings: 1) a runaway vehicle or animal is moving fast without anyone controlling it, 2) increasing more quickly than expected, runaway success/inflation/growth and 3) a runaway person has left their home or has escaped from somewhere. Meanings 1 and 3 are more basic than meaning 2; meaning 3 is somewhat older historically based on [13] and therefore is considered as basic. It is obvious that climate change is a complex phenomenon that cannot literally runaway as what a person can do. As a result, meaning 2, which says that runaway can be used about success, inflation, growth is used to describe a condition which are out of control.

In sum, describing climate change as moving slowly, accelerating and as having speed represents the use of movement words to talk about change. In such a case, movement metaphors may contain evaluation in which people may be persuaded without realizing that they are. Mentioning that climate change is runaway can imply that climate change is out of control and that we should stop it. In the next session, the discussion of key concept of metaphors is further given.

3.1.1 Environmentalism is movement

The linguistic metaphor describes the achievement of an environmental goal, either the desired or actual one as illustrated in the following data.

- 7) 'We need to move rapidly for a clean energy future,' said Charlie Garlow.
- 8) However, on the whole, the industry has been sleepwalking toward a low-carbon economy.
- 9) And in the EU and New Zealand we have seen some good movement on renewable energy targets

In datum 7, the verb *move* and the adverb *rapidly* are used to suggest how the environmentalist goal of a clean energy future should be obtained. The speaker meant to use *move* in its literal meaning to suggest that people should move quickly to do certain things, for example to establish policies favouring clean energy future as soon as possible. Besides, in datum 8, the verb *sleepwalk* and the preposition *toward* are used to talk about how industry is dealing with the goal of achieving a low-carbon economy. The lexical meaning of *sleepwalking* as derived from the dictionary is the action of walking and sometimes doing things while you are sleeping. Adding some intuition to that lexical meaning of *sleepwalking*, a person who is sleepwalking is typically unconscious and walking slowly without having any specific goal. This may be part of the concept *sleepwalking* that is used to highlight something about the behavior of the industries mentioned in datum 8. It is thus possible to understand the contextual meaning of *lacking the motivation to achieving* in term of *unconsciousness*. Furthermore, *toward* expresses direction of movement and underlines that a low carbon economy is a purpose. It may be regarded as a realization of 'purposes are destinations'.

3.1.2 Environmentalism is a journey

The following data illustrate the use of environmentalism talked of as a journey.

- 10) This is the first important step on a long journey to reduce both countries greenhouse gas emissions.

- 11) Most importantly, it is the year in which the international community, meeting in Copenhagen in December, must agree on urgent and dramatic action to avert the looming climate disaster and define the path toward a more sustainable, more survivable future.

A real journey is about moving from one place to another physically, for example afoot or by means of some kind of vehicle, in order to reach a destination, or a goal, while in datum 10, the word *journey* is used to talk about all the efforts and planning that needs to be done in order to reach the environmental goal of reducing greenhouse gas emissions. Meanwhile, in datum 11, *path* is used to talk about the political decisions that needs to be made in order to secure 'a more sustainable future'.

Since journey metaphors are also movement metaphors, the same point that was made about movement metaphors above is also valid for journey metaphors; that they serve to reify the target domain. Journeys are more concrete than environmental politics. To most people, it is easier to imagine being on a path and moving towards a certain destination than to imagine all of the political decisions and efforts that must be made to achieve a certain aim. Besides, journeys are something that many people think of as something positive. Reaching the final destination may be associated with relief, a feeling of success and excitement. Thus, talking about climate change politics in terms of journeys may help people understand the issue as well as perhaps encourage them to contribute to reaching the goal.

3.1.3 Environmentalism is construction

In the following examples, some of the linguistic metaphors categorized as environmentalism as construction are presented:

- 12) The blueprint for a clean energy future shows how the EU can reduce its carbon footprint through phasing out nuclear power and coal, and instead investing in clean energy.
- 13) Of the Clean Development Mechanism, a United Nations program that helps poor countries battle global warming, he said, "Things like the CDM are unfortunately very small, marginal tools."
- 14) Siberian larch forests, under threat from the hydro-electric dam project, play a crucial role in carbon balance maintenance and global climate change control.

In the data, *blueprint* has been used to talk about different plans for how to prevent climate change, for example by reducing carbon emissions, through phasing out nuclear power and coal, as in datum 12. According to the dictionary, the most basic meaning of *blueprint* is 'a drawing that shows how to build something such as a building or a machine, often printed with white lines on blue paper'. Further, *tools* as used in datum 13, and *maintenance* as used in datum 14 are linguistic metaphors that involve talking about climate change initiatives in terms of construction. Some of the pragmatic effects that environmentalism is construction metaphors may have is that they may encourage people to think that we can indeed influence climate change, by convincing people that we do have tools to fix it and repair it.

3.1.4 Personification in climate change discourse

There are several target domains that have been personified in the material, namely *CO₂*, *climate change* and *fossil fuels*. The words are used as follow:

- 15) Not only is coal the single greatest contributor to the greatest crisis facing our planet – climate change; but it is also responsible for air pollution, illnesses, human rights abuses, forced displacement of communities, blowing up mountains, contaminating water, drying up lakes, reducing crop yields and killing people.
- 16) Climate change is happening now and threatens everyone.
- 17) The existing program covers a much wider variety of energy projects, including "advanced nuclear" power plants, plants that "gasify" coal or turn it into liquid form, and plants that capture and bury carbon dioxide, a greenhouse gas produced by coal power plants.

As stated in [10] definition of personification, when words that have a basic meaning dealing with human or possibly animal behaviour were used to talk about climate change issues, which are inanimate, they were identified as personification.

The basic meaning of *to face* is 'to be opposite someone or something so that your face or front is towards them' [11], i.e. it is typically persons, and possibly animals, that face something. The meaning of *threaten*, this verb means to tell someone that you will do them harm. In other words, you need to have the intention of threatening and you also need to know how to threaten in order to actually do it. Only animate things can have intentions of and be in the state of knowing how to threat someone else. Further, the basic meaning of for example capture is 'to catch someone so that they become your prisoner'. Thus, 'capturing' typically involves that something animate captures some other animate entity, for example that an animal captures another animal. CO₂ is inanimate, and therefore this use of *capture* was identified as a metaphor. *Tyranny* also necessarily involves such intentional and elaborate action.

In datum 15, *capture* is used in the sense 'to gather' carbon dioxide. This basic meaning of *to capture* is to catch someone in order to make them your prisoner (MED). Therefore, talking of capturing carbon dioxide implies talking about the gas as a 'someone', i.e. as a person. As known that, carbon dioxide, or rather, the increased amount of carbon dioxide in the atmosphere, is the main cause of climate change, it is possible to see the personification of carbon dioxide as related to the higher-level conceptual metaphor *event is action*. That is, an increase in the amount of carbon dioxide in the atmosphere can be seen as an event, and this event can be regarded as caused by carbon dioxide, or, metaphorically, the increase in the *amount* of carbon dioxide can be seen as the result of an action performed by carbon dioxide

3.2 Discussion

The findings show that the great majority of the metaphors used in climate change discourses are about environmentalism. Looking at the source domain, most of the linguistic metaphors are movement metaphors. *The environmentalism is movement* metaphor may be regarded a reification of the target domain. Environmentalism, like most political issues and phenomena, is complex and abstract. movement, on the other hand, is a more concrete concept that is easier to relate to. As Semino points out, this may contribute to explain the motivation for this kind of metaphor [17]. It seems reasonable to assume that such metaphors may function as a cognitive heuristic for the reader, as they make it easier for the reader to understand the target issue.

Furthermore, in *environmentalism is a journey*, Semino suggests that we typically think of journeys as being composed of the following elements: starting point, a destination, a path connecting the two, and a direction of movement. She presents the source domain of JOURNEY as a dominant source domain within Western politics. However, she also

mentions, referring to Kövecses, that it is a wide-scope source domain that can be used about a large variety of issues [17]. According to Lakoff, ‘long-term, purposeful activities are journeys’ is a conventional metaphor [8].

Meanwhile, in *the environmentalism is construction*, the construction metaphors may be seen as expressing the view that we are capable of controlling nature. Construction of buildings and machines are not only complex matters, they are matters that are unquestionably human businesses. It involves that we, human beings, are in control; that we are the ones who decide what is going to happen, for example as concerns which materials to use, the function of the building/machine, etc. As mentioned above, [5] claim that machine metaphors used about nature involve the human desire of controlling and improving nature; to make nature a ‘better machine’. Thus, *environmentalism is construction* may seem somewhat anthropocentric. Certainly, it is a convenient idea that we may be able to be in control and be in charge of the maintenance of the climate just like we are in control as concerns the buildings and machines that we construct [19].

Eventually, the personification used allows us to understand a wide variety of nonhuman things in terms of our own motivations, characteristics and activities [9]. Further, personification may be seen as related to a conceptual metaphor called ‘events are actions’, which involves that we understand external events as actions. That is, we understand events as produced by an active, wilful agent.

4 CONCLUSION

This paper is on the analysis of metaphorical expression to talk about climate change issues in real discourse that is on online media. It is shown that regarding the aspects of metaphor namely source domain and target domain, the metaphors used about climate change and environmentalism are movement, construction, and personification metaphors. This study can be seen as the preparatory study of a larger-scale study on metaphors in climate change discourse. That is, it can be seen as a study on a smaller corpus carried out before concordancing from a large corpus in order to make more generalisable linguistic observations by using the method suggested by Deignan (2005).

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