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Scientific persuasion and use of language forms: A rhetorical enquiry of climate change publications in Namibia

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Abstract
The paper sought to explore the dynamics of the rhetoric of the language of science on climate change publications. The arguments presented in this paper were drawn from the theoretical framework that saw rhetorical argument and discourse as an important feature of scientific publications. This research paper aimed at making a consequential input to an ongoing debate about climate change in Namibia and the world over; the use of rhetorical devices in the construction of knowledge about climate change; analysis and exploration of rhetorical elements employed by science researchers. The research was inspired by the study of rhetoric. As such the research looked at the progression of persuasive methodical argument and facts, as a result providing a clear understanding of how scientific publications influence government policy on climate change. The paper adopted a qualitative approach. Rhetorical interpretations of science publications seemed complex, as such required a research design that enables such complexity to be analysed and explored. The paper found that different rhetorical moves were used by the authors of the analysed documents, to try and persuade policymakers and the public. The study revealed the frequent use of scare tactics by the authors to try and persuade the public about climate change. Moreover, the study exposed the presence of the language forms that seemed to rely on perpetual persuasive techniques to persuade the current and future generations.

Keywords: persuasion, language forms, rhetorical enquiry, climate change

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Introduction

The study of rhetoric has traditionally and particularly been concerned with humanities and social sciences. The findings and knowledge produced by rhetorical studies have been, it seems, arranged as a system of perception rather than authentic science knowledge. The idea that rhetoric exists in scientific study, to many, is virtually non-existent and unheard of let alone scientific findings on climate change. Some may ask: why bother with the study of rhetoric in climate change publications, when it is accepted general knowledge that science rests on evidence, and as such it is disconnected from emotions? It is also important to state that for a long-time science has been characterised by a firm anti-rhetorical tradition. In the current study, an attempt was made to examine the rhetorical devices used in scientific publications on climate change in Namibia. The study offers insights and perspective concerning science communication in relation to other forms of communication. Persuasive techniques and strategies employed by the authors in published climate change papers were meticulously examined.

Background of the study

The rhetoric of science seems to be grounded in the assumptions that rhetoric mediates the shape and systematic influence of science. Gross (1990) argues that understanding science requires a legitimate subject of rhetoric. This is because rhetorical conjecture provides an illuminating model and a set of methodical techniques for the elucidation of the complex texts generated by particular cases of scientific communication or publications.

Thus, the rhetorical analysis of science texts and discourse brings attention to the persuasive magnitude of scientific findings. Accordingly, the present study explored and examined rhetorical devices used in selected academic science publications in Namibia on the subject of climate change, to provide a better understanding of science discourse. The investigation was based on the theoretical framework that sees rhetorical argument, structure, and discourse as important features of science publications on climate change.

The qualitative nature of this study meant that the numerous limitations that sprang from this study needed to be taken into consideration and interpreted. The fact that a limited number of climate change publications were used meant that the likelihood of overgeneralisation was to occur. As such, generalising the findings to global audience may be challenging as writers living in different areas of the world might have different experiences regarding climate change and the way it should be presented in writing to different audiences.

Nevertheless, generalisation can still be made from the findings to help us understand the rhetoric of climate change beyond the borders of Namibia. Of course, the qualitative approach does not aim to be statistically representative of the findings, but it provides context to the sample. Notwithstanding the limitations of the study, the study provided a wider understanding of how scientists communicate their findings into the public discourse.
The study was limited to a critical examination of the selected scholarly science publications on climate change in Namibia. Engaging the authors of the selected publications would have been ideal, but due to logistical constraints, this was not possible.

The interpretational latitude of this paper may have centred on various specific variables. There is a plethora of literatures on the rhetoric of science, but the fact that this research study used a sample of 3 science publications delimits the study only to those selected publications. The differences in the science dynamics in different subjects could mean that some science publications may not entail the rhetorical features extracted from the analysed texts.

Literature review

The idea that rhetoric exists in science studies, to many, is virtually non-existent and unheard of, let alone scientific findings on climate change. Some may ask: why bother to study rhetoric

in science publications, when it is general knowledge that science rests on evidence, and as such it is disconnected from persuasion? Also, for a long time science has been characterised by a firm anti-rhetorical tradition. Gross (1993) contends that underneath the facade of objectivity resides a ferocious struggle to gain followers for a particular viewpoint and claims precedence for a breakthrough. Science findings and science knowledge are believed to have been founded as a result of "rigorous testing and experimentation, and as such, it is equated to a strong rational conviction and does not depend on persuasion" (Behrendt, 2001, p. 189). Because of a traditional belief that science does not use persuasive techniques, there seems to be a dearth of critical information on the rhetoric of scientific publications on climate change in Namibia. As a result, an independent source of evidence to secure social scientific claims on climate and grounds for facts of science in the public interest has been largely ignored.

To understand the rhetorical analysis of scientific publications on climate change in Namibia, it is imperative to define and explain what the rhetoric of science is. There is a plethora of definitions and explanations provided concerning rhetoric, but for purpose of this study, some of the definitions are used. Aristotle (1886) defines rhetoric as the faculty of discovering in any particular case all of the available means of persuasion. Gross (1993) observes that Aristotle had seen that rhetoric was an activity central to the efficient functioning of the Greek city-state. For Aristotle, it was more of oral culture and male culture to see "the available means of persuasion" in each case, and effectively utilise those means with the desire of reinforcing conviction and deed. In other words, rhetoric is an attempt to coordinate and influence human choices on specific matters that require immediate attention.

For the purpose of this study, an explanation of rhetoric of science by Gross (1993) is used. Gross views rhetoric as 'the process of persuasion in the lab and in the field, and in the study.' On the contrary, some scientists such as Max Perutz, cited by (Frye, 1996, p.1), views rhetoric of science rather differently from other scholars. Perutz is reported to have said "rhetoric of science is humbug" and that individuals who do not understand the underlying science are the ones who attempt to critically examine scientific writings. Furthermore, Gross (1993) adds by presenting the example of Thomas Kuhn's analysis of how scientific discourse occurs.

> The brute facts themselves mean nothing; only statements have meaning and of the truth of those statements we must be persuaded. These processes, by which problems are chosen and results interpreted, are essentially rhetorical: only through persuasion are importance and meaning established, (Gross, 1993, p.4)

The is to suggest that rhetoric is inevitable and ubiquitous.

Rhetorical analysis of science publication on climate change in Namibia is likely to provide a model for public understanding of the language of science, textual characteristics, visuals and context. Gross (1990) argues that understanding science requires a legitimate subject to rhetoric. This is because rhetorical conjecture provides an illuminating model and a set of methodical techniques for the elucidation of the complex texts generated by a particular case of scientific communication or publications. It should further be understood that the rhetoric of science is philosophical for the task at hand in that the authenticity of what climate scientists write about is irrelevant to analysing how they win over their peers that a particular analysis is acceptable or unacceptable. Gross' (1993) investigation of the DNA discovery, Charles Darwin's formulation of his theory of evolution, and Isaac Newton's effort to have his Optics accepted by the scientific community demonstrate how science writing, further than the bare appearance of measures and 'truthful' results, is mutually a biased and juridical process. The political observation is over which hypothesis should be followed and over what substantiation should be weighed within the framework. That scientists concur to examine scientific 'reality makes the nature of those realities debatable.

As an academic field of study, Gale (2005) sees rhetoric of science as a study of how scientists and non-scientists the world over use arguments to advance claims about science, like it is stated before, the idea that rhetoric exists in science may seem perverse to some scholars, and to some, it may seem obvious. Most scientists perhaps view rhetoric as something that probably connotes something less truthful, particularly in politics. Tying rhetoric to science seems like a curse which Gale (2005) refers to as staining the purity of certain knowledge and accurate measurement with the mark of ideological bias and political manoeuvring. Of course, to scholars of rhetoric, the term rhetoric of science is not necessarily seen as having connotation. Rather, the rhetoric of science is viewed from its ancient tradition; it denotes the meticulous examination of how texts are designed to seek the attention of the audience or public.

In the world of academia, rhetoric does not mean mere falsehoods or empty words over substance. Ceccarelli (2017) observed that despite drawing from old tradition, the rhetoric of science is still seen as a relatively young field of study. However, despite being a young field, Ceccarelli believes that rhetoric plays a significant role in understanding climate change. For example, rhetoricians have introduced the concept of litotes as a way for climate scientists to respond effectively to imprecise but poignant imagery. Ceccarelli (Ibid) views litotes as a figure of speech which functions as an understatement by stating the negation of its opposite. Litotes rely on the texts.

To all intents and purposes, when these texts come from the realm of science, the means of persuasion used entail factors as appeals to disciplinary assumption and values, and revelation to methodological rigour, and the chosen discourse that suggests the neutral observation of nature.

In the initial stage of the rhetoric of science development most scholars, of course, focused on internal rhetoric because they thought that the internal discourse of scientists was resistant to rhetorical scrutiny. Conversely, despite the limitation in the scope of the study, the rhetoric of science began to expand, with scholars such as Bazerman1988; Gross 1990; miller 1992; fisher 1994) examining various scientific articles to explain their persuasive designs via rhetorical theories vis-à-vis ethos, irony, kairos, stasis and narrative. A notable observation is how the research was devoted to the development of the rhetoric of science to illuminate writing practices in the science genre. Standing out is the manuscript written by Bazerman (1988) in which scientific articles were contrasted with other forms of discourse. The findings by Bazerman revealed how scientists used, transformed and invented equipment and tricks of symbolic trade to influence claims so that they are judged truthfully by other scientists.

Scholarly, scientists view themselves as perhaps responsible for that growth of knowledge, and this knowledge is the central activity of scientists. Scholars of rhetoric have focused on the way scientists use the tools of language and arguments to advance knowledge claims. Interesting internal rhetoric of science that has received less attention is how scientists convince and persuade one another pertaining to an area of research that holds future promise. This reluctance prompted Myers (1990) to devote a whole chapter explaining the rhetoric of grant proposal, a kind of scientific writing that should persuade reviewers that a research proposal deserves funding because it has potentials interest to the scientists and the professional ethos of the writers. Myers' effort was later on complemented by Ceccarelli (2001) examined the motivational texts of science to reveal that scientists who tend to use strategic ambiguity of language are likely able to induce fellow scientists from various disciplines to overcome barriers diverging their fields. The studies by both Myers (1990) and Ceccarelli (2001) point to the direction that internal rhetoric of science tends to be descriptive and broadly explanatory in its makeup.

However, further analysis of the two studies' findings reveals that rhetoric of science entails implicit prescriptive ethos, providing different resources of a language and argument which

scientists seem to use to shape and mould science in an ethical way. Fahnestock (1986) demonstrated, after contrasting scientific journal articles that were written for popularisation purposes, that rhetorical inquiry that focuses on popularisation, which is another genre of the rhetoric of science – tend to do away or remove hedges.

It can clearly be seen from the above findings that the absence of hedges and other rhetorical devices may be distorted by the public or audience about the importance of scientific knowledge claim, which can easily be precarious if the subject entails threatening social implications. Public audiences tend to develop an image of science as the unquestioned observation of nature and does not have any interferences from scientists regardless of the methods and theories these scientists employed.

Science scholars may bristle at the suggestion of rhetoric of science and may see it as an implicit invasion on the status of science, particularly its epistemological claim. For some scientists, the idea of the science of rhetoric could be interpreted as an attack on their integrity. What these scientists should perhaps understand is that science involves a language, inescapably entails rhetoric. Ornatowski (2007) noted that whatever makes functional use of words and phrases is likely to be involved in the technical problems associated with words, including rhetorical issues. Ornatowski (Ibid) likewise argued that the rhetorical outlook of science anchors at the bottom on the premises that science is nature, but science only represents it, of course, any representation entails strategies of representation.

Many science scholars argue that in science data speak for themselves, well, Keller (1985) seemed to not buy into the idea of scientific data speaking for itself when the scholar argued that despite scientists insisting on the idea of data speaking for itself, the truth is that data does not really 'speak.' It was argued further that people speak for the data, and when they do they inevitably face challenges such as what to say (invention); who should listen (audience); what is the aim of presenting the data (argumentation); ways in which data should be prepared (stylistic), and the manner of presentation and articulation (delivery). Therefore, the rhetoric of science entails issues of how and what scientists decide to say. Similarly, it entails issues of scientists' way of communicating, and how they communicate.

Discourse seems to be embedded in the process of creating and arriving at scientific knowledge. Reeves (2005) explained that the term discourse, apart from the common understanding that discourse refers to the structure of rules for language use that evolves in the community through conscious choice and cultural forces, also refers to the patterns of a language that can be identified abound to a particular community and context. This view is supported by Latour (1987) who argued that the formulation of scientific knowledge involves scientists arguing and negotiating their written texts with reviewers, editors and even fellow scientists in the laboratory. Based on the explanation, it can be argued that scientific discourse, therefore, refers to the general language of science, patterns of rule-governed language used among scientists (Reeves, 2005). All language is governed by rules. That is when one speaks or writes, one must follow rules guiding word order and idioms as well as specialised rules for communicating in a specialised community. In specialised communities such as science, rules and conventions evolve, in response to new pressures and needs. From these arguments, it can clearly be seen that discourse does not only express the emerging knowledge but also moulds the emerging knowledge through specialised rules.

Various scholars have also postulated that scientific texts may carry a complex connection between knowledge and practical reality. To substantiate this observation, Keller (1985) once again noted that many scholars of science have singled out the structure of scientific papers, arguing that the actual experience of carrying out science activities is not always reflected in the final paper. This observation seems to hold water because final science publications rarely reflect incidents, failures and negotiations. Of course, science research and publications require that scientists interpret, articulate, compose, discuss and review their publications.

Ornatowski (2007) is in agreement with the above submission, arguing that ideas and language are inextricably linked and intertwined. The scholar further explained that ideas did not exist in some neutral space, but they emerged in response to circumstances, and are adjusted. On this ground, it can be argued that rhetoric of science attempts to identify the presence of the underlying assumptions in a scientific text. Arguably rhetorical approaches to science start with the connection between practice, discourse, knowledge and attempts to arrive at a coherent record of science as a particular area of discourse.

It should further be noted that despite some initial cynical approaches by rhetoricians to undermine science that it pretends to be objective, neutral and privileged, the rhetoric of science has since become a section of a bigger philosophical effort to rethink the nature of human knowledge in light of wider debates.

A study carried by Preli (1989) looked at five dimensions of scientific discourse. One of the dimensions that seem to stand out is the dimension of symbolic inducement wherein it is argued that scientists tend to induce others to share an orientation for assessing and sensing situated phenomena and the connections among them. These scientists seem to be well aware that research and writing processes entail decision making, adjudication, negotiation and selection. They use all these characteristics to motivate any choice they make in a laboratory or the field. To ensure that their finding is acceptable, a claim is shown as consistent, systematic, standardised and seems measurable. Ornatowski (2007) contextualised this observation by saying that scientific discourse tends to exhibit an increased persuasive orientation, and prefers contextualisation that Preli (1989) refers to as the period for symbolic inducement.

Another scientific rhetorical dimension of scientific discourse unearthed by Preli (Ibid) is the situatedness dimension. Under this dimension, rhetorical moves such as exigencies – an appropriate event that calls for response – inclusive of the context of audience expectations and conditions, is demonstrated by scientific discourse. Preli revealed that scientific discourse is situated in the rhetorical sense, arguing that scientists work, speak and write in various places that make up rhetorical situations, with embedded expectations, constraints and opportunities.

In the same study, Preli's findings revealed the third dimension of scientific discourse: the transactional dimension. The study argues that the third dimension orientates towards gaining acceptance for one's ideas and findings, securing interest in one's work and associating one's activity in what is seen as prestige field and connections. Meanwhile, the fourth dimension of scientific discourse looks at the reasonableness of the activity. Herein, scientific claims are dully judged based on formal logic not according to reasonableness that holds for other kinds of discourse, but the judgment is in accordance with the criteria of reasonableness particular to science. Criteria may include the relevance of data, the precision of measurements, result consistency and warrantedness of conclusions.

By the same token, the fourth dimension entails problem-solving skills through experimentation – replication, corroboration, and observational competence, predictive power.

Evaluative – involves accuracy, internal consistency, scope simplicity and elegance.
Exemplary – involves examples, analogies and metaphors.
Ethical – involves universality, scepticism, and commonality.

The above criteria may alter over time, and it may even be foregrounded or challenged as part of the argument. It is this knowledge that is essential to the professional and rhetorical competence of the scientists.

The fifth and perhaps, the most prominent, dimension of scientific discourse is the invented dimension. Invented dimension has nothing to do with information being cooked up or made up, but the term merely refers to how scientists do not necessarily ramble on about their findings and theories but rather how they engage in coherent argumentation and presentational theatrical performance. The performance entails, inter alia, recognising appropriate purpose for the argument, pinpointing the exact position of departure – stasis scientists situating themselves within the existing body of knowledge, and sticking to orthodox criteria for reasonableness and usefulness.

Contextually, this paper has focused on how scientists build knowledge, communicate, and influence their broader society. Thus, the study has placed the scientific arguments and claims on a similar footing with economic, political and global view arguments. Respectively, this study has analysed climate change discourses and explicitly focused on the rhetoric of climate. The rhetorical perspective is the angle this paper has taken throughout, but there are also academic arguments from various scholars that have shaped the stance of the study.

Through rhetorical perspective, data or information, specifically on climate change prediction can easily be tested to find out about the truth of the claim. For example, when the scientist's present information about the predictability of the danger associated with exposure to climate change they are definitely making a claim about the truth to their statements. This is so because these scientists have known that such prediction could easily be contested, surely they may frame their statements to be acceptable. Similarly, the scientists who strive for absolute objectivity are likely to assert the morality of the scientific findings and sincerity.
Rhetorical observation thus threats scientific claims, methods and discoveries as being socially constructed. Putting scientific claims to rhetorical lens provides an opportunity to extract scientific discourse out of its scientific cocoon and make this discourse available for analysis with other rhetorical discourses.

The challenge most scientists face when they make arguments about climate change, it seems, is how to convince the public that there is something requiring their attention. For argument sake, if climate change scientists discover the reality of the danger of climate change, then the rhetorical situation would entail the exigency which Bitzer (1968) discussed: something arising from outside themselves and quickly confronting the people. In the study carried out by Reiner and Malone (1998), it was found that scientists tend to rely on exigency because unlike war and sport, where physical evidence is presented, climate change evidence is normally based on the artificial construct. For example, when scientists claim that the cutting down of trees in Kavango East and West has resulted in a high concentration of carbon dioxide, it becomes increasingly difficult for these scientists to provide evidence that non-scientists can agree to.

Methodology
As a desk study, the researcher analysed existing climate change sources or publications. The research study was qualitative in nature since the collected sources were examined from a rhetorical standpoint. Phrases and words extracted from the sources were listed and subsequently analysed accordingly. The listing of phrases and words necessitated the analysis to be based on rhetorical characteristics. Three science scholarly publications (Barnes, MacGregor, & Alberts, 2012; Ministry of Environment Tourism, 2008; Wilhelm, 2012***)*** on climate change were selected based on their diversity in subject matters: if two authors wrote on the same topic, one was purposefully chosen.

Results and Discussion
Publication 1 - Impact of climate change in Namibia: A case study of Omusati region. (Wilhelm, 2012)
The first publication investigated the impact of climate change in Namibia with a particular focus on the socio-economic impact of flooding in the northern regions of Namibia. The

publication further examined the socio-economic conditions of the local people as a result of the 2009 flooding in most of the northern central regions. The findings presented in the publication suggest that the 2009 flooding had caused massive damage to the northern central regions, particularly to the Oshituna village and had cost the government a substantial amount of money to assist the people to cope with the floods.

Persuasion and language forms

In the preliminary part of publication 1, the author seems to have established credibility of the findings through citations of various renowned authors in the field of climate change. Hashim (2010, p. 379) observed that "establishing credibility is part of persuasive moves." By citing several authors, Wilhelm intends to establish credibility since readers would identify the findings with the renowned authors. Through this way, the author is likely to solidify the argument and findings to win the hearts and minds of the policymakers and the public.

Scientific persuasion entails the use of the language of science. Richards, Platt, and Webber (1985, p.159) define the language of science as "language used for particular and restricted types of communication, containing lexical, grammar and other linguistics features which are different from ordinary language." Often, it is argued that the language of science is made up of informative texts, and the texts dominant appeal form is logos as the sender needs to persuade the receiver that the texts present a credible picture of subject matter (Helder, 2001). Bhatia (2002) similarly observed that to reach communicative goals, reasonable and considerable changes to the language of science use have been significantly introduced. Because of these considerable changes to the language of science, the language has become more expressive and stylistically marked to attract the attention of the readers and raise their interest in science and technology. As indicated earlier, advancement in science and technology means that the language of science is vastly influenced by the development of popular scientific texts.

Tentative Language

The use of modal auxiliary verbs "will" as in "climate will be shaped (p.1); climate change will vary (p.2); climate will affect (p.3)" and "could," as in "infections could also increase *(*p.3)" are intended to perform vital tasks. Throughout, the author employed modal auxiliaries in all the structure of the text under analysis, this is perhaps to macro organise the text. As it can be seen from this observation, the author seems to have considerable confidence in the particular propositional argument; by using "will," the author assumes the role of writing with absolute certainty that climate change will vary going forward.

The text is stylistically punctuated with discourse markers that are strategically located. From the onset, the author of the climate change publication seems to have presented the written text by using tentative language and discourse markers to look objective. Clark and Zyngier (2003) contended that the central function of stylistics is to illuminate a language of the text and the relationship between language and possible meanings and interpretation generated by it. Ordinarily, stylistics is viewed as what drives persuasion in science texts (Pera, 1994). To substantiate this observation, Pera (Ibid) postulated that contemporary scientific rhetoric contains persuasive moves of reasoning and argumentation, geared at shaping the belief system to the public in scientific deliberations.

Contextually and semantically, Wilhelm (2012) presents scientific arguments by relying on prediction and a futuristic approach to drive the message deep in the hearts and minds of the readers. For example, phrases such as "rainfall are predicted to decrease due to climate change (p.4)" is likely to resonate well in the hearts and minds of the readers, since most of them are likely to assume that the scientific pronouncement has been based on trusted evidence. The author pins hope on the general understanding that the public would assume that the future truly looks hostile for them.

Scare Tactics

Particularly, the author presents the findings of the study by relying on scare tactics. The phrase "changes in weather pattern are likely to reduce food production (p.4)" could have been used analogically to reinforce changes in human behaviour. The author draws a parallel between climate and food as a way to reinforce human behaviour towards the environment.

Finally, the authors continued to appeal to the emotion of the poor and the general public by claiming: "Poverty and lack of income are likely to be experienced by people if measures are not taken immediately [p. 40]." The phrase is self -explanatory, the authors seem to rely on emotional appeal by reminding the authority of the potential danger climate change poses to people's lives. The continuous use of scare tactic is distinctive. Like it is argued before it seems the harsh environmental conditions being experienced by countries in southern Africa are being exploited by climate change scientists to appeal to the public fear. This observation is in agreement with Steymor's (2017) findings after 111 countries around the world were surveyed regarding climate change perception. The survey revealed that Americans and Europeans felt substantially less threatened by climate change than they had been when a survey was conducted four years earlier. In contrast, sub-Saharan Africans and Latin Americans saw themselves being more at risk. By reminding the readers about the potential impact climate has on income, the rhetorical function the statement carries is to appeal and persuade that reader about the need to fight climate change.

From an elucidating point of view, the rhetorical function of the statement should be seen as an attempt to illuminate the significance of discourse, advocacy, and orientation of arguments towards the truths at a particular time and space. Correspondingly, rhetoric paves the way for comprehending sophisticated and complex issues as a result of linguistic symbols the statement carries. Throughout the discussion or analysis, the authors relentlessly relied heavily on scare tactic and exaggeration to make their message heard.

Publication 2 - Climate Change Vulnerability and Adaptation Assessment Namibia (CCVAAN) (Ministry of Environment Tourism, 2008)

Publication 2 addresses the vulnerability of the water and agricultural sectors to climate change. It further suggests adaptation measures to deal with climatic impacts. Accordingly, the publication places vulnerability in the socio-economic contexts of rural areas, more especially in the Zambezi and Karas regions.

Equally, in the introductory part of publication 2, the report seems to establish the credibility of the findings through citations of various renowned authors in the field of climate change. In addition, the report cites a legal framework as a way to establish credibility and trust with the readers. Below is an extract from the introduction:

> *"Namibia ratified the United Nations Framework Convention on Climate Change in 1995 and became legally obligated to adopt and implement policies and measures designed to mitigate the effects of climate change and to adapt to such changes" (Ministry of Environment Tourism, 2008, p. 1).*

The report opens with Namibia's ratification of the United Nation Framework Convention on Climate Change (UNFCCC). The United Nations (UN) legal framework on climate change seems to have been foregrounded in the introduction in order to signal to the readers that the report is reliable, and therefore genuine. By citing the legal framework, the report intends to establish credibility since readers would identify the findings with the renowned UN. Through this way, the report is likely to solidify the arguments and findings in order to win the hearts and minds of the policymakers and the public at large.

Aristotle (1886) defines rhetoric as the faculty of discovering in any scrupulous case all of the available means of persuasion. Against this understanding, it seems the authors of the report

seem to have understood Aristotle well because the citation of a legal framework is likely intended to persuade the readers.

The sentences and phrases used by the various authors in the document appear to carry rhetorical moves suggested by Hashim (2010) and are likely to be intended to persuade the readers. “Arid environment is extremely high in terms of natural variability (p.7)” If the above extraction is anything to go by, then it can be argued that rhetorical devices were used consciously or unconsciously by the authors, with the aim of persuading the readers to agree with the findings. The use of the word “extremely” indicates the extent of rhetorical intensity employed by the authors in their quest to persuade the public and policymakers. Semantically, one would have expected the scientists to write the phrase as ‘Arid environment is high in terms of natural variability as opposed to the arid environment is extremely high in terms of natural variability. From a scientific point of view, intensifying and magnifying adjectives and adverbs are, in most cases, not necessary. However, it should be noted that the above phrase’s rhetorical function is to drum up support against climate change. Also, the phrase has the potential to be an influential phrase in terms of scientific discourse.

Respectively, the rhetorical function of the statement “Climate change has implication for one’s chance to move out of poverty (p. 7)” is intended to appeal to the pathos of the poor majority. The writer argues that if climate change is not solved, the less fortunate people would remain in poverty. Similarly, the statement could be interpreted that climate change brings about poverty, and if it is not mitigated it has the potential to perpetuate poverty among poor people. The readers are likely to be persuaded by a statement as they make the connection between climate change and poverty. Thus, by drawing a parallel line between the two, the authors instil a sense of fear into the hearts of the poor, and the message has the potential to resonate well in public discourse.

The authors of the document went a step further to solidify their findings by claiming that “the high level of dependence of rural dwellers on subsistence agriculture makes Namibia vulnerable to climate change [p.36].” It is evident from the above assertion that the authors appear determined to make a case that would appeal to the pathos of the largely literate public, and at the same time providing evidence, in some instances, that may be persuasive to the policy makers and politicians.

Moreover, the authors claimed: “As a result of a flood, loss of a family member, a breadwinner, can be devastating to a household where a man dies and the spouse and children are left behind with the responsibility to continue cultivation and cattle raising, many households fail and gradually fall into poverty [p.38].” Ceccarelli (2017) contends that scientists can reach out to sceptical readers with appeals that signal their vulnerability rather than their supremacy. The rhetorical function of the statement above is to appeal to the readers’ vulnerability – the writers used the death of a family and a breadwinner to cement their appeal. By reminding the readers that a family member or a breadwinner could die as a result of climate change, the statement has the potential to persuade the readers, in most cases, the policymakers. Death is used in this argument to reinforce behaviour towards climate change. Gross (1990) was certainly plausible when he said that beneath scientists claim of objectivity resides a fierce struggle to gain followers for a particular viewpoint or to claim precedence for a discovery.

What is more, the writers further claimed that an “Increase in population will lead to internal migration (p.38).” The rhetorical function of this claim is that if climate change is not dealt with urgently it has the potential to unrest in terms of internal migration. This is so because climate change issues are intertwined with societal issues.

Publication 3 - Expected climate change impacts on land and natural resources use in Namibia: Exploring economically efficient responses (Barnes, MacGregor, & Alberts, 2012)

In the initial stage of Publication 3, the writers argue that "over a period of 20 years, the annual losses to the Namibian economy could be up to six per cent of the gross national product (GDP) due to the impact climate change will have on its natural resources (p. 4)." Tying the economy to climate change, the writer's rhetoric is to argue that the decline in economic growth would affect the poor most, with ensuing constraints on employment opportunities and dwindling wages, particularly for unskilled labour. It can equally be argued that the writers are reminding the readers that Namibia should ensure to take measures that might mitigate climate change. Similarly, by tying the economy to climate change, the writers perhaps want climate change to be mainstreamed into substantial policies that would bring about the necessary action needed to deal with the perceived deteriorating climate.

Moreover, the writers use tourism as a form of persuasive tool to convince Namibians to mitigate the impact of climate change. The rhetorical function of the following sentence is particularly compelling: "Tourism is a rapidly growing sector in Namibia, and the leisure tourism component of this, which makes up some forty per cent, is dominated by nature-based pursuits (p. 7)." Of course, the "nature-based" aspect is attributable to a variety of natural property, together with landscape and wildlife, which are the most significant. The writers are urging the readers to protect these natural assets by mitigating the impact of climate change. In the same vein, the writers are appealing to their audience that good tourism can only be maintained if climate change impact is fully minimised.

Significantly, tourism, as demonstrated above, holds important relative advantages for Namibia because it is not entirely dependent on inadequate and irregular rainfall, but it makes use of the natural beauty inherent in the landscapes. As such protecting the environment is of paramount importance. The writers seem to be aware of this dynamic and use that caveat to persuade their audience about the need to protect the environment without just focusing on rainfall. Also, the fact that tourism tends to be confined to a small area around areas of high picturesque value and flora and fauna concentrations, the writers' rhetoric seems to resonate well with their audiences as they can relate to the possible benefits which could be accrued from the protection of the environment.

Textually, the following statement seems particularly remarkable: "It must be acknowledged that increased concentration of CO2 may result in a fertilisation effect as predicted by the dynamic global vegetation model (p. 18)." Worth noting here is the daring use of the word "must," despite the authors sounding cautious; the word must seem very telling. The idea of making the argument that the public should acknowledge an increase in the concentration of carbon dioxide (CO2) a "must" is to drive the opinion towards the authors' perception of the world. Not known to most readers is perhaps that the idea being advanced in this submission is likely inseparable from the language employed by the authors, the language of persuasion. Ornatowski (2007) is in agreement with the above submission, arguing that ideas and language are inextricably linked and intertwined. The scholar further explains that ideas do not exist in some neutral space, but they emerged in response to circumstances. Beneath the wording "must" lays an emotional command, although science scholars are likely to dismiss the observation. But, the notion that somehow language of science is non-emotional was refuted by Crystal (2006, p.23) who argued that "it is the myth of science language that it can be characterized solely as emotionless, factual, objective and stable.'' Nevertheless, at present rhetoric goes beyond emotion, it is studied as a comprehensive approach for the production of persuasive arguments as a collection of coded solutions for effective communication. To cement their persuasive argument further, the writers contend that "In the case of traditional livestock keeping, the effects of climate change on financial and economic viability will be least p. 27)." The rhetorical function of this is that in the tourism sector the financial losses are minimal because the tourism sector is partially made up of climate prone

activities such as wildlife viewing, but other tourist activities such as none biological attributes and beautiful sceneries hardly get affected by climate change.

Conclusions

The findings demonstrated the dynamic context and helped unravel the scientific claims that science is objective and thus detached from human persuasion. The fact that the language was used to convey scientific findings represented a challenge for scientists to be non-persuasive. It can be concluded that different rhetorical moves and strategies were used by the authors of the analysed documents, to try and influence policymakers and the public. Furthermore, for the publications on climate change in Namibia to resonate well in the public discourse on climate change, the public and environmental policymakers must trust those who are trying to convince them, as such rhetoric was central to the conveyance of the message.

Throughout the literature review, it is argued that texts are a set of words that have no inherent meaning or connection to the objective world of things; as such interpretation of the climate, findings is also uncertain. The study further reveals frequent use of scare tactics by the authors to try and persuade the public about climate change. By the same token, exaggeration was observed. The authors appeared to have tried to exaggerate certain climatic situations to drum up support for their findings. Rhetoric played a significant role in the reconstruction of knowledge and moral order within the confines of this science publications understudy. It was observed throughout the discussion how scientists ontologically perceive reality and truth, and how they process that reality and truth to become knowledge that the public and policymakers would trust and believe. The use of scare tactics in the central part of Namibia can be viewed as a way of drumming up support for climate change since water seems to have become a sensitive topic in the Khomas Region. As such, appealing to the pathos of the inhabitants in that part of the country evokes emotion and drum up support for the cause. Moreover, the study revealed the presence of language forms that seemed to rely on perpetual persuasive techniques in order to persuade the current and future generations. The language forms appeared to have been designed to accommodate posterity. Remarkably, most writers or scientists appeared to have expected the possible backlash from their peers and have used language cautiously and tentatively.

Recommendations

Since human beings have become active agents in the moulding and reshaping of physical climates the world over, while at the same time absorbing cultural, political, social and ethical practices in reinterpreting what climate change is, studies should be carried out to provide a clear understanding of the rhetoric of climate change.

Given the seeming inability for countries to cooperate on what to do to mitigate climate change and the fact that politics plays role in many studies on climate change, the paper recommends that the issue that should be tackled should be about exploring and examining arguments scientists are making to determine non-bias truth. More studies should be devoted to developing tools for non-bias truth in the language of science interpretations. Since human beings have become active agents in the moulding and reshaping of physical climate the world over, while at the same time absorbing cultural, political, social and ethical practices in reinterpreting what climate change is, more studies should be carried out to provide a clear understanding of the rhetoric of climate change.

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