A Case Study of Linguistic Manipulation in Exxon's Corpus of Internal and Public Communications as Discourse Strategy to Neutralize Public Opposition

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Abstract

The increase in scientific research in the late 1900s prompted questioning in Exxon, an oil giant, on the ethics of their operations. Exxon responded with numerous public statements and documents that shed off accusations and critics. Exxon was able to operate despite numerous obstacles for decades. The linguistic strategies of epistemic modality, first person plural personal pronouns, and textual complexity implemented in these stated texts highlight a trend of functioning to cast doubt and prevent opposition. A case study of primary documents shared internally and publicly highlighted major differences in the textual metafunction of grammatical items and the variances in lexical structure. The vast difference in informational output despite similar visual texts gives reason for analyzing a discourse industry strategy Exxon successfully utilized to nullify the mass outcries of hazardous operations.

Introduction

In the final third of the 20th century, the rise of oil and gas companies instigated research into the environmental impact of such industrial giants (Pratt, 2012). Executives and representatives of Exxon gave public speeches at conferences and released official documents to the general public that seemingly contained heavy use of semantic misdirection. The company's possible manipulation of text allowed Exxon to evade the claims of an increasingly knowledgeable field on climate change and oil operations in the US (Franta, 2021). The company's self-valorizing tool may emerge in modern-day texts to avoid legalities and continue to operate despite scientific testament building in opposition.

In linguistic theory, semantics is a non-contextual meaning in language. Critical discourse analysis (CDA) is a tool to assess how text alters language and meaning (Fowler, 1997). Utilization of CDA in texts can exhibit the manipulation of language power, the influence of words and the patterns of tone that are present across industry communications. Ideas can be negated while other interests are served in a positive or

brighter spotlight. Thus, delving into the case study of Exxon and their respective documents is an insightful endeavor that this paper seeks to accomplish: the textual metafunction of linguistic devices plays a principal role in the discourse industry strategy of Exxon. This study can show how language in corporate messaging is intentional and serves a unique purpose.

Methodology

One of the most influential linguistic theories tied to CDA is Norman Fairclough's model (Fowler, 1997). He created a three-dimensional structure to discourse analysis of textual metafunction. The first dimension uses traditional functional linguistics in analyzing text. The second-dimension studies literature as a communicator of ideology, focusing on genre and intertextuality. The third dimension provides the most invoking thought, critiquing potential hegemonic practices and looking at the social and institutional aspects of text.

Fairclough supported Halliday's Systemic Functional Grammar, which is a radical theory on how language is shaped by its communicators and how linguistic theory is determined by its design for use (Matthiessen, 2012). This theory gives proof that CDA is an applicatory tool of linguistics and can aid in "demonstrating ideological process[es] that may not be heeded on the surface and educating people on 'critical language awareness'" (Fairclough, 2013).

The design of the CDA implemented in this study is a step-by-step review of the following literary devices of textual metafunction. The first dimension is examined through quantitative and qualitative analysis of epistemic modality, first person plural personal pronouns, textual lexical density and information entropy. These specific linguistic features were examined because they have been established by linguistic research as appropriate indicators for semantic function of texts (Kareinen, 2019). This is then put into context of the second dimension, where two distinct genres are identified through intertextuality: doubt expressing (G1) and non-doubt expressing (G2). Finally, third dimension analysis was performed to determine possible social ramifications of Exxon messaging. The documents under review are from primary documents dating from 1970; these are written by either executives of Exxon (later ExxonMobil establishments) addressing climate change in public memos or Exxon scientists conveying research findings in internal company documents. Each document is approximately within 1 to 3 pages single spaced in typewriter fashion.

Exxon's Proof of Intent in Linguistic Manipulation

The question of potential industry strategy in Exxon's public memos is prompted by the company's internal documents giving acknowledgement

to climate change and its severity, which research was theorizing around 1975. The 1975 Imperial Oil Pamphlet: Exxon and the Environment, created by the Canadian subsidiary of Exxon, is peppered with recognition of Exxon's responsibility in climate change. It should be noted that this document was shared only within the company at the time, lending to the conclusion that the purpose of this document was merely for the betterment of the company and its future plans. For example, "We recognize that the natural environment has been damaged by the operations of our own industry, along with many other activities that are a part of an urban and industrialized society. We realize that cleaner operations are healthier and safer, for the public and for our employees" (Imperial Oil Ltd, 1975). In this statement, there are several admissions of culpability and recognition for change in Exxon's operations. Executives were explicitly using phrases such as "damaged by our own industry" and "we recognize," furthermore cementing admission. This starkly contrasts messaging found within Exxon's public memos. Therefore, there is encouragement for investigation of textual metafunction in public memos that causes the differentiation in theme between the two domains of communication, and specifically the linguistic devices that allow Exxon to accomplish their discourse industry strategy.

Epistemic Modality Analysis of Public Memos Responding To Climate Change From 1980 to 2000

On November 19, 1979, Exxon executive Henry Shaw wrote to H.N Heinburg, a leader in the global warming studies for Exxon, about the potential research of environmental controls. Shaw also expressed interest in creating a defensive program in this scientific field in order to influence legislation on company matters (Shaw, 1979). For example, in 1979 Exxon Memo on Atmospheric Science Research to Influence Legislation, there is significant use of epistemic modality across the document. Epistemic modality is a linguistic feature which expresses degree of belief in the truth of a proposition; specifically, it is the "evaluation of the chances that a ƒ certain hypothetical state of affairs under consideration (or some aspect of it) will occur, is occurring or has occurred in a possible world" (Nuyts, 2001). This continuum creates two extremes where reality can fall anywhere between the absolute truth or absolute certainty that the truth is false. Key signals are may, might, must, perhaps, and possibly. While these epistemic adverbs can have different semantic interpretations based on context or speaker identity, in every circumstance there will be a decrease in credence allowing for the appropriate analysis of first dimension CDA.

	1979 Shaw Public Memo		1980 Exxon Internal Memorandum	
Key Words	Frequency	Percentage	Frequency	Percentage
May	2	8%	0	0%
Might	1	4%	0	0%
Perhaps	0	0%	0	0%
Possibly	1	4%	1	2.5%
Must	0	0%	0	0%

FIGURE 1. Comparison of the prevalence of modal auxiliary adverbs in Exxon's public and private messaging through units of frequency.

In Shaw's messages, the keywords listed appear quite frequently compared to internal documents. Frequencies were counted in units that note any use of keywords that result in credence reduction. Percentage was calculated for the two documents based on the fact each key word represented 1 complete sentence affected over the total number of sentences contributing to the report. Shaw's 1979 Memo had 25 total sentences while the scientific report in 1980 had 40 total sentences. It should be noted that a portion of the documents containing objective details was omitted due to the nature of the text having no credence or degree of belief in the truth, rendering epistemic modality as non-applicable.

The 1979 memo had 16 percent of sentences containing these key signals compared to the 1980's 2.5 percent, a noticeable difference (Table 1). In fact, the public memo had an 8% prevalence of the key word "may" in comparison to 0% prevalence in the internal memorandum. This shows that Shaw had given a memo with greater epistemic modality.

The resulting outcome is that the epistemic modality causes the public message to not be portrayed as the absolute truth nor absolute uncertainty, rather it is somewhere in between. The '80 Internal Memorandum's only keyword use, "possibly," was in parentheses to present a personal note to ponder. This reflects that the content of the whole document remained direct despite this observed use of epistemic modality, and that instance was not intended for discourse industry strategy (Werthamer & Weinberg, 1980). Meanwhile, the '79 memo frequently uses 3 different modal items of the examined 5 (Imperial Oil Ltd, 1979) (Table 1); these are implemented directly in the main paragraphs of the text exemplifying the discourse industry strategy that Shaw is attempting. This linguistic use can avoid contradictions because of the role these auxiliary modal adverbs enact (Martin et al., 2017). Thus, in the public memo, Exxon was able to use epistemic modality to implement their strategy of stating radical claims while avoiding culpability.

In 1996, An Exxon presentation on Purported Change in Climate Change continued to express several modal adverbs in efforts of epistemic modality that would cast doubt and uncertainty on scientific research. Statements like "Climate Change is likely a factor." and "Marine Plankton usually in dominant state." are presenting doubt in the research done on climate change with an emphasis on non-true statements that contain modal adverbs such as "usually" or "likely" (Al-Rashady, 2012). These modal adverbs play the role of hedging devices that detract from the certainty of the statements. In frank terms, this Exxon report shows patterns of many points that cannot be simply categorized false or with malintent. Therefore, it is hard to formulate any argument against the corporation due its effective discourse strategy.

First-Person Plural Personal Pronouns

The use of first-person plural personal pronouns (FP4s) is one of the most common uses in scientific journals because it closes the distance between the author and the audience (Martin et al., 2017). Using personal pronouns, such as "we;" "our;" "us," includes the audience in the claims. This study examines the FP4 "we." FP4s were manually categorized in this study based on established definitions of functions (Kuo, 1999).

There are two facets of first-person plural use: exclusive and inclusive (Kuo, 1999). Exclusive use of "we" removes the reader/intended audience from the discussion – referred to as "We 1" in Tables 2 and 3. On the other hand, inclusive use entails inclusion of the reader/intended audience – referred to as "We 2" in Tables 2 and 3. Exxon's corpus varies their use as seems fit, but analysis of the discourse function of each FP4 gives insight on the main message and attitude of the text. For example, the exclusive "we" can be implemented for the following discourse functions: justifying a proposition, expressing a personal wish, or attempting to show personal contributions. These functions will most often be used by the writer to characterize context and emphasize their personal roles. Inclusive uses of "we" are also found within text usually to show agreement, shared knowledge, or indicated necessity as a common belief between the writers and audience. Below are example sentences of primary exclusive discourse functions.

"We did not find sufficient data to make a conclusion—showing results"
"We believe that the new X model will allow for more efficient progress—contributing to research or showing commitment"
"We wish that you would understand the current context —expressing wish or expectation"

Inclusive functions example sentences provided with "we":

"We need to continue our investigation – indicating necessity"
"Looking at Table 1, we see a trend of linear increase – assuming shared knowledge"
"We hope to meet later this week to discuss terms – seeking agreement or cooperation"

The two other functions, hedging a proposition and justifying a proposition, were added later after text analysis and were seen as relevant in functions of FP4 in the Exxon texts reviewed. An example from Exxon's text itself gives clearance.

> Of course, the more important question is have we detected human induced climate change that leads us to believe that future climate change will have serious negative impacts – hedging a proposition.

The documents used were 2002 ExxonMobil Lobbyist Randy Randol Memorandum to White House (public), 1980 Imperial Oil Newsletter (public), Exxon View on greenhouse effect 1980 (private) and 1983 letter from Exxon to Esso regarding Natuna environmental concerns (private).

Discourse Functions — Private		We 1	We 2	We 3	Total
1.	Showing Results	0	0	0	0
2.	Justifying a proposition	4	0	0	4
3.	Hedging a proposition or claim	1	0	0	1
4.	Assuming shared knowledge (goals, ideas, beliefs, etc.)	3	0	0	3
5.	Seeking agreement or cooperation	1	2	0	3
6.	Showing commitment or contributions to research	1	0	0	1
7.	Expressing wish or expectation	5	0	0	5
8.	Indicating necessity	2	0	0	2
Total		17	2	0	19
Percentage		.789	.211	0	1

We 1: writers; We 2: writers and intended audience; We 3: the discipline as a whole

FIGURE 2. Categorization of discourse functions for the inclusive (We 2) and exclusive (We 1) use of "we" in Exxon private messaging (Randol, 2002; Eckelmann, 1980; Natkin, 1983; Imperial Oil Ltd, 1980).

3.	Hedging a proposition or claim	0	0	5	5
4.	Assuming shared knowledge (goals, ideas, beliefs, etc.)	0	0	0	0
5.	Seeking agreement or cooperation	2	1	0	3
6.	Showing commitment or contributions to research	1	0	0	1
7.	Expressing wish or expectation	1	0	1	2
8.	Indicating necessity	0	0	0	0
Total		5	1	7	13
Percentage		.38	0.08	0.54	1

we 1: writers; we 2: writers and audience; we 3: the discipline as a whole

FIGURE 3. Categorization of discourse functions for the inclusive (We 2) and exclusive (We 1) use of "we" in Exxon public messaging.

In Table 2, there is a 78.9% use of exclusive "we" signifying that, when communicating internally, Exxon is clearly attributing responsibility to themselves and accepting a personal role. The main discourse functions are justifying a proposition, assuming shared knowledge, and expressing wishes or expectations. This speaks to the function of internal documents: trying to better the company with active movements and setting goals. However, in public texts, more than half of FP4 use, 54%, is interestingly categorized to the discipline, referring neither the writers (We 1) nor the writers and the audience (We 2) but a common field (We 3). In this case, it references information applied to the U.S nation. This gives rationale that Exxon's strategy was to de-emphasize their own role to an extent and attempt to bring in the entire nation to widen the context. This causes the actual audience to focus less on specific prominent issues and forces them to take a general "big picture" view. Note that there were 5 uses of FP4 functioning to hedge a proposition or claim in public documents (Table 3). These further illustrate the discourse industry strategy that Exxon has used in their public communication. Moreover, the FP4 in public texts had only 1 "we" functioning to justify a proposition. There was no "we" use expressing necessity, suggesting that Exxon public text engaging the writer, audience, or the nation was not addressing urgent matters. Thus,

the discourse function analysis of Exxon's corpus leads to a conclusion that the discourse industry strategy can misdirect the attention with the use of FP4s.

Linguistic Complexity in Exxon's Corpus

Interpreting the textual complexity of texts is a very general term that is often labeled in one theoretical perspective. To determine the overarching use of Exxon's discourse strategy, analysis of the textual complexity can be important due to highlighting textual characters such as informativeness. In this section, a two-dimensional approach from a syntactic (variations in word structure) and semantic (variation in meaning) outlook can correlate with one another to determine a more accurate value of textual complexity; one that will give a well-proofed comprehension on the quality of information in a text (Tolochko & Boomgaarden, 2019).

Analyzing semantic complexity can process the language specifically to show output of Exxon's corpus which contains meaning. This study will measure the textual complexity with two metrics supporting the semantic complexity of Exxon's documentations: the Measure of Textual Lexical Density (MTLD) and Information Entropy (IE). MTLD will calculate the unique words and new language throughout a text and produce a value after accounting for the total number of words. MTLD uses type token ratio (TTR) values, which are calculated for example by dividing the number of different by total words in any amount of text (McCarthy & Jarvis, 2010).

Sample Computation of MTLD: The (1.00) navy (1.00) fought (1.00) more (1.00) yesterday (1.00). Today (1.00) the (0.86) army (0.875) had (0.89) fought (0.90) more (0.81). The (0.75) navy (0.69) will (1.00) not (1.00) be (1.00) happy (1.00) because (1.00) the (1.00) army (1.00) is (1.00) happy (0.89).

In the above example, the partial factor is found by dividing (1-0.89)/(1-0.72) = 0.39. The total number of full factors in this case is 14, add 0.39. This gives the factor count of 14.39. Then to finally find the MTLD value of this analysis, divide the total words in the text by the factor count. If there were 75 total words in the text, (75/14.39) would give the MTLD value.

Multiple studies have determined that 0.72 is a consistent reliable set TTR value for a given text and will be used as the set value in this case study (Vanmassenhove et al., 2021; Koizumi, 2012; Treffers-Daller et al., 2018). Further research also heavily encourages getting a MTLD of a text reading right-to-left. Although unconventional, it produces a second MTLD score that can average the forward and reverse values to produce a more accurate value.

In Exxon's text, randomly selected excerpts from internal and public documents were selected and calculated for MTLD. 21 Excerpts were selected to give a larger sample size for analysis. The average score of 3 excerpts for public documents gave a MTLD of 87.65 (Carlson, 1988).

Private excerpts had an average of 113.25 (Devlin, 1996). The evidence demonstrates that the mean MTLD score of private documents is greater than public documents). This gives evidence that private documents had more unique language implementation, lending to more textual complexity. This higher textual complexity in private documents suggests more details compared to texts sent to critics and the press.

Information Entropy (IE) is a metric that can further support the conclusion made from MTLD calculations. IE measures, in a general sense, the unpredictability of information. I applied Shannon's Entropy Formula for the calculation of randomly generated sentences from a pool of internal and public texts by Exxon.

	IE in bits	
Sentence (public)	1	4.06
Sentence (public)	2	3.45
Sentence (public)	3	4.01
Sentence (private)	4	4.21
Sentence (private)	5	4.22
Sentence (private)	6	4.27

FIGURE 4. Information Entropy of Exxon excerpts.

No public sentences had an IE value above 4.1 bits; meanwhile, private documents never had values below 4.2. These higher values of information entropy in private documents correlate with the values of higher values in MTLD. The two metrics can relate that private Exxon text held less redundancy and projected more textual complexity; a strong sign the quality of information was consistently new (Razumovskaya, 2010). This funds computed linguistic tools, further emphasizing that the textual function in Exxon's public documents was to send less substantial information out to critics and readers. Another interpretation could be that internal documents contain information that isn't necessarily relevant for public messaging. The comparisons between private and public corpus in Exxon's history shows how discourse industry strategy allowed for public

documentations to suppress opposition of the company's actions by not allowing for useful engagement with public texts.

Genre Identification

In performing second-dimension CDA of the first dimensional semantic functions, we can identify two genres to categorize the results: doubt expressing (G1) versus non-doubt expressing (G2). Exxon documents presented in conferences and other forms of public communications such as pamphlets and newsletters, lied heavily in G1 based on the results of the above linguistic tools – showing common functional features inter-text. However, most private documents that were communicated internally, and discovered decades later under investigations, fell under G2 (Hall, 2015). There was much less use of modal language and hedging claims in G2. This may be expected but can foreshadow patterns of hiding relevant and key information. The examination of private and public documentation from Exxon concerning climate change will need larger sample sizes to make better conclusions, yet the common pattern from linguistic tools recognize public messaging much more prevalent in G1 compared to private communications.

Social Aspect of Exxon's Communication

In looking at the third dimension of CDA, the linguistic differences between private and public documents in Exxon have functioned as a strategy to neutralize their own statements from scientific outlash. This is proven by Exxon's reluctance to address climate change in the latter quarter of the 20th century. For example, they neither set any reduction targets on greenhouse gas emissions nor invested in renewable energy. This is important because even other mass oil companies like Shell based in Europe had started to invest a greater involvement in climate change concerns (Skjaerseth, Skodvin). The subtle implementation of modal verbs, adverbs, and adjectives can go unnoticed. Therefore, released industry documents, intentional or not, created a line of defense. This mechanism of defense, in using epistemic modality, allowed Exxon to avoid taking full responsibility for claims proven false. Moreover, when attacking researchers' claims to be false, they were not jeopardizing their validity in the field of climate change.

The difference in functions of personal pronouns between Exxon's communications presents the impact a simple grammatical item can make on text. This further gives evidence of the discourse industry strategy implemented. Exxon used linguistic manipulation to create a doubt expressing (G1) genre of text that sheds off growing protest. Calculations of MTLD and IE support the notion of Exxon's private documents containing more information, although further research into more documents from 1970 to 2000 would give even more of an accurate

outlook. More relevant is the fact that public communications were not receiving all the statistics run by Exxon; further investigations proved that Exxon had eventually recognized climate change but evaded the public with frequent use of doubt expressing communication.

Conclusion

Overall, the CDA on primary documents of Exxon gave ample patterns of how the textual metafunction in public messaging could have drastically altered the semantics of text. Consequently, this played a key role in the maintenance of Exxon's policies that had severe impacts on the environment.

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