

**PART TWO:
FORM-TO-MEANING NEGATIVES**

2. Negation and Climate Change in French Blog Posts

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1. Introduction

Can the use of negation be seen as a metric for the contentiousness of an issue? This is the basic assumption that forms the point of departure for the present study. By expressing an opposition to another point of view (Ducrot, 1984, Nølke et al., 2004), negation has the potential to crystallise and reproduce two fronts of a given issue. Few issues are as societally important as climate change (CC). During the last few decades, the public prominence of different aspects of CC – the prognoses offered by science, the necessity of mitigation and adaptation, the division of respective responsibilities of various nation states – have ebbed and flowed as a result of political and natural events such as the Kyoto summit in 1997 and the California wildfires in 2018. The year 2007 stands out as particularly important in this regard, as the Intergovernmental Panel on Climate Change (IPCC) and Al Gore were jointly awarded the Nobel Peace Prize, in recognition of their efforts to inform the global population of the risks of CC. This recognition had the added effect of amplifying this very message. However, the following years were characterised by both disappointment (e.g. the CC summit in Copenhagen in 2009) and controversy (e.g. the release of internal e-mails from the University of East Anglia, also referred to as ‘climategate’, in 2009). All the while, the IPCC’s prognosis of CC grew more dire, as laid out in its 5th Assessment Report published in 2013. While the Panel’s mandate is only to give a summary of the available science, it did provide a subtle rebuttal to one specific argument

How to cite this book chapter:

Gjerstad, Ø. and Fløttum, K. 2023. Negation and Climate Change in French Blog Posts. In: Roitman, M. (ed.) *Negatives and Meaning: Social Setting and Pragmatic Effects: Using Negatives in Political Discourse, Social Media and Oral Interaction*, pp. 27–41. Stockholm: Stockholm University Press. DOI: <https://doi.org/10.16993/bcd.b>. License: CC BY 4.0.

advanced by CC sceptics, in the form of negation (see Gjerstad and Fløttum, 2017):

- (1) In addition to robust multi-decadal warming, global mean surface temperature exhibits substantial decadal and interannual variability (see Figure SPM.1). Due to natural variability, trends based on short records are very sensitive to the beginning and end dates and do not in general reflect long-term climate trends.

At first glance, the negation in (1) appears to correct a possible misrepresentation by the reader. However, it reads as far more polemic considering the context at the time. Sceptics had presented a global cooling between 1998 and 2012 as evidence that CC was not occurring, thereby seeking to undermine the IPCC's very mission, as well as the rationale for any global political agreement within the UN framework (Gjerstad and Fløttum, 2017). When read in this light, the IPCC's remark on how to read statistical data reads as a clear rebuttal to those voices.

While the IPCC's assessment reports set the premise both for media coverage and diplomatic negotiations on CC, it is difficult to discern any broader linguistic or discursive tendencies on the basis of a single text. The question is thus how, if at all, the use of negation in CC discourse at a societal level reflects the evolving stakes of the issue. To explore this question, the present study will analyse blog posts from the NTAP French blog corpus (see Section 2). Our research question is formulated as follows: to what extent does the polemical nature of CC discourse and its societal implications transpire through the use of negation? We hypothesise that negations in relation to CC are more frequent in the time period 2013–2014 than in the period 2007–2008, because of the increasing politicisation of the issue in the intervening years. Our findings will also be qualitatively compared to a sample of negations found in the corpus French Web 2017 (frTenTen17), serving as a reference corpus for the present study (see section 2). But first and foremost, this corpus will be used to explore two central questions that form the basis for this study: 1. Does negation correlate more frequently with lexical items associated with controversial topics than with those that are considered less controversial? 2. If such a metric proves to be fruitful, does climate change prove to be a controversial issue relative to others? This comparison will subsequently allow us to explore whether we can measure variation in the degree of contentiousness associated with climate change through the quantitative study of negation in the NTAP French blog corpus.

The study of climate change discourse in the present chapter is one among a series of analyses undertaken on the role of language in this field since the beginning of the 2000s (see Gjerstad and Fløttum, 2017). An agenda was set by the seminal paper published by Brigitte Nerlich and colleagues in 2010 which affirmed that: “Investigations of climate change communication cannot avoid attending to the role of language” (Nerlich et al., 2010, pp. 103). Another relevant reference is the book *Why we disagree about climate change*, by Mike Hulme, published in 2009, which provides an overview of the multi-faceted context in which linguistic representations of CC appear. One reason for the growing interest in language analyses of climate change discourse is the fact that CC has moved from being predominantly a physical phenomenon to being simultaneously social, political, economic, cultural, ethical, and, most importantly for this study, communicational. Research has shown that the meaning people ascribe to CC is closely related to how it is portrayed during communication. Thus, studies of words, of combinations of words, and of entire texts taken from different contexts, such as scientific reports, political documents, mainstream media, and now social media have been addressed in different quantitative and qualitative analyses, or in a mix of the two (for an overview, see Fløttum, 2016; see also Fløttum (ed.), 2017). The present paper adds to this research.

Our approach is based on the Scandinavian Theory of Linguistic Polyphony, or ScaPoLine (Nølke et al., 2004, Nølke, 2017b), which is heavily inspired by Ducrot (1984). According to this theory, there are linguistic markers that signal the presence of ‘voices’ other than that of the speaker at the moment of utterance. Among such markers are reported speech, argumentative connectives, and negation. Our choice of a polyphonic approach is justified by the fact that the climate change discourse is particularly “multi-voiced”, and includes both explicit and implicit (or ‘hidden’) voices representing different actors and interests. In the present paper we focus on one polyphonic marker (Nølke et al., 2004), namely polemic negation, a choice that is based on a twofold justification. First, with some exceptions (e.g. Gjerstad and Fløttum, 2017), the potential of polemic negation as a marker of contentiousness in climate change discourse (about both causes of the phenomenon and solutions to tackle it) has not been fully explored. Second, information-wise, polemic negation seems to be the most efficient way of refuting an opinion; a single grammatical element is capable of invalidating an entire proposition. With regard to the choice of blogs as material for our study, we believe that this genre is particularly appropriate to our

objective due to its discursive heterogeneity and large degree of interactivity (Gjesdal and Gjerstad, 2015, Fløttum, et al., 2019). A societal rationale for undertaking this research is that insights from linguistic studies contribute to an improved knowledge base, which allows for social and political actions to be undertaken in order to limit the dangerous consequences of climate change.

In the following section we will briefly present our material (table 2.1), before laying out and analysing our quantitative results (table 2.2). Section 3 will concern the difference between polemic and descriptive negations, and will ask the question of whether this difference is important to the reading of our quantitative results.

2. Material and quantitative analysis

Our material is taken from the NTAP French blog corpus, accessible via the platform Corpuscle/Clarino at the University of Bergen (Meurer, 2012). This corpus consists of posts from 2,033 French blogs, related to the topic of climate change, and covers the years 1974–2014. The total word count is 1,506,074,082 words. It has been built through a topically-focused approach, which means that the blogs in this study have been selected according to the presence of lexical words broadly related to climate change. Our reference corpus is the French Web 2017 corpus (frTenTen17), comprising a total of 5.7 billion words collected from internet-based texts. By including texts from a number of internet based text genres, this corpus is well suited to explore our initial research questions: 1. Does negation correlate more frequently with lexical items associated with controversial topics than with those that are considered less controversial? 2. If such a metric appears to be fruitful, does climate change prove to be a controversial issue relative to others? Through simple frequency searches, we explored the correlation between negation and different words associated with varying degree of controversy. The search stipulated up to 10 words between ‘pas’ and the search words, yielding the results in table 2.1.

These results do come with an important caveat: The lexical items have not been chosen according to any objective criteria, meaning that the results must be considered as tentative. Nevertheless, the tendency seems clear: when talking about contentious topics, speakers or writers appear more likely to use negation than when they talk about less controversial topics. The results for ‘climatique’ and ‘changement climatique’ are quite surprising in this regard, as they indicate that climate change is a relatively uncontroversial topic on Francophone websites.

Table 2.1. Lexical items correlating with negation.

Lexical item	Frequency	Percentage correlating with 'pas' (-10/+10 items)
Tourisme	318,734	3.208%
Vacances	538,384	7.728%
Plage	429,797	5.166%
Pizza	55,230	6.971%
Religion	405,206	10.52%
Terroristes	86,940	9.063%
Capitalisme	119,796	10.05%
Brexit	27,239	9.292%
Trump	108,929	10.16%
Climatique	256,589	4.899%
Changement climatique	96,888	3.924%

Moving on to the NTAP corpus, we first identified sentences containing the negation 'pas' ('not') in three combinations: with 'climat', 'climatique' and 'réchauffement', from all the blogs of the time periods 2007–2008 and 2013–2014. As in the reference corpus search, we allowed a text string of up to 10 words between 'pas' and the other search words. For the searches we used the statistics tool integrated in Corpuscle. This involved, first, eliminating all double occurrences (for example when both 'réchauffement' and 'climatique' appeared in the same sentence, this sentence entered in both the 'réchauffement' search and the 'climatique' search), and second, removing all occurrences of 'climat' and 'réchauffement' that were unrelated to the issue of CC, such as in 'le climat politique' or 'réchauffement de relations diplomatiques'. 'Climatique' did not require such a review, as it is almost exclusively used to denote CC. The remaining occurrences of the three words represent a wide variety of sub-topics, from the attribution of responsibility for CC to political measures and international negotiations:

- (2) Ban Ki-moon a rappelé que, selon les derniers rapports du Groupe d'experts intergouvernemental sur l' évolution du climat (GIEC),

“le réchauffement de la planète est sans équivoque, son impact est manifeste et il ne fait pas de doute que les activités humaines y contribuent de façon considérable” (2007_climat)

Ban Ki-moon has pointed out that, according to the latest reports of the Intergovernmental Panel on Climate Change (IPCC), “the warming of the planet is unequivocal, its impact is manifest and there is no doubt that human activities contribute to it to a considerable extent” (2007_climat)

- (3) “Il va nous falloir faire plus, et cela ne devrait pas être une question de politique partisane”, a affirmé M. Obama, dont les ambitieuses promesses en matière de lutte contre le changement climatique se sont brisées depuis 2009 sur l'intransigeance des élus du Congrès. (2014_climatique)

“We will need to do more, and it shouldn't be a question of partisan politics”, Mr. Obama stated. His ambitious promises regarding the fight against climate change have since 2009 been broken on the intransigence of members of Congress. (2014_climatique)

The data provided by the machine searches and the manual analyses are presented in Table 2.2:

Table 2.2. Relative frequency of negation by year.

Year	No. of negations pertaining to climate	Total no. of words	Rel. freq
2007	1309	56.242.668	0.002327%
2008	1713	102.219.050	0.001676%
2007–2008	3022	158.461.718	0.001907%
2013	3179	275.526.199	0.001154%
2014	4589	250.062.586	0.001835%
2013–2014	7768	525.588.785	0.001478%

Contrary to our expectations, the relative frequency of negations related to CC is higher for the period 2007–2008 than for 2013–2014. This is despite a global increase in controversy during the intervening years. However, these numbers do not take into account the number

of negations relative to the absolute frequency of ‘climat’, ‘climatique’ and ‘réchauffement’. In other words, they do not account for the likelihood that a word pertaining to CC co-occurs with negation. If this likelihood correlates with the increase in the polemical nature of CC discourse, then our hypothesis is strengthened. However, as stated above, the corpus includes text material which has nothing to do with CC, such as the political situation in various Francophone countries. In order to remove this irrelevant data we decided to leave aside the words ‘climat’ and ‘réchauffement’ from our analysis, as they are frequently used in other contexts. Instead, we looked at the number of negations co-occurring with ‘climatique’, relative to its absolute frequency during each of the four years. The advantage of selecting only ‘climatique’ is that it is almost exclusively used in reference to the topic of CC.

Table 2.3. Frequency of negation and the word *climatique* by year.

Year	No. of negations co-occurring with <i>climatique</i>	Total occurrences of <i>climatique</i>	Frequency of negation relative to <i>climatique</i>
2007	812	7036	0.115
2008	978	8940	0.109
2007–2008	1790	15.976	0.112
2013	1798	12.316	0.146
2014	2722	20.681	0.132
2013–2014	4520	32.997	0.137

The numbers in Table 2.3 indicate that during the time period 2013–2014, there is a slightly higher likelihood of negation when talking about climate issues than during the period 2007–2008. When looking at individual years, the differences are more noticeable. The peak year is 2013, which is the same year as the publication of the IPCC’s 5th Synthesis Report. This seems to support our initial hypothesis that the use of negation increases with the degree of controversy surrounding a given issue.

3. Qualitative analysis

While the negation is *a priori* a polyphonic marker by virtue of refuting an underlying point of view (pov), it can also be interpreted descriptively, i.e. as a manner to characterise an individual or a state of affairs (Birkelund 2017). In such uses, the polemical interpretation of the negation is neutralised as a result of linguistic or contextual factors. An oft-cited example is *There's not a cloud in the sky*, which does not signal any disagreement regarding the weather, but is interpreted as a description akin to *The sky is blue* (Nølke 2017a, pp. 152)¹. This means that it is not sufficient to merely count the occurrences of negation to trace the changes in the construction of CC as a controversial issue. It is also necessary to qualitatively analyse a selection of occurrences from each time period, to see whether there is a change in the distribution of polemic and descriptive negations. There is an underlying assumption behind this question, namely that the share of polemic negations increases with the degree to which a given topic is contested. This is by no means a given, but it must be taken into account as a possibility².

The qualitative analysis consists of a random selection of 10 examples from each of the searches of 'climat', 'climatique' and 'réchauffement', from all four years (2007, 2008, 2013 and 2014), totalling 120 examples. The analysis follows mainly Nølke's work (1994, 2017a) on the linguistic and contextual factors which guide the interpretation of negation as either polemic or descriptive (see also Gjerstad and Fløttum, 2017).

Among the factors which reinforce the polemic interpretation are polyphonic and argumentative contexts, such as the concessive structure formed by *mais (but)* in (4):

- (4) Le prix nobel de la paix a été remis conjointement, cette année, à AL GORE et aux experts du Groupement d'experts Intergouvernementaux sur l'évolution du climat (G.I.E.C.). Ainsi, l'écologie et le développement durable sont mis en avant, comme deux éléments nécessaires (mais malheureusement pas suffisants) pour garantir la paix à travers le monde. (climat_2007)

The Nobel Peace Prize has been given jointly this year to Al Gore and to the experts of the Intergovernmental Panel on Climate Change (IPCC). In this way, ecology and sustainable development are put forth as two necessary (but unfortunately not sufficient) elements to guarantee peace throughout the world. (climat_2007)

The counter-argumentative context creates several possible polyphonic interpretations. The negation could be interpreted as an attempt to avoid

giving the reader the impression that the two elements are sufficient for world peace, an impression that is grounded in the fixed phrase ‘une condition nécessaire et suffisante’. Alternatively, the author could be attempting to avoid creating an impression of naïveté by inserting a caveat in parentheses, thus pre-empting a negative reaction on the part of the reader³.

According to Nølke (2017a, pp. 158–159), the polemic interpretation imposes itself in utterances that form a contrast. Such a contrast is made explicit in example (5) :

- (5) La production de CO₂ serait un phénomène naturel, et une conséquence du climat, pas la cause. (climat_2008).

The production of CO₂ would be a natural phenomenon, and a consequence of climate, not the cause. (climat_2008)

In this instance, the polemic interpretation is further reinforced by strong a priori expectation that CO₂ emissions are the cause of CC.

In the absence of such an explicit contrast, non-gradable predicates can serve to create an implicit contrast, thereby blocking (or reducing the likelihood of) a descriptive interpretation (ibid.):

- (6) Le nucléaire (sic) ne sauvera pas le climat. (climat_2007)

Nuclear power will not save the climate. (climat_2007)

The predicate creates a binary opposition between *save the climate* and *not save the climate*, which creates the basis for the polemic opposition of two points of view. In contrast, gradable predicates lend themselves to descriptive interpretations:

- (7) L'idée de la géoingénierie, c'est-à-dire l'action à grande échelle pour modifier le climat, n'est d'ailleurs pas nouvelle. (climat_2008)

The idea of geoengineering, meaning large scale action to modify the climate, is not new, for that matter. (climat_2008).

In example (7), the negation does not seem to refute an underlying pov, but to situate the predicate on a scale ranging from new to old. In other words, the use of negation in this case serves to create a description which would not be possible by using a positive predicate (i.e. ‘not new’ is slightly different from ‘old’). In other terms, while the previous three examples are cases of contradiction, where either the positive or negative alternative must be true, example (7) presents a case of contrariety, where the two alternatives are mutually exclusive without being mutually exhaustive, leaving space for a number of other alternatives

(see also Nølke 2017a, p. 161). However, it is important to note that extralinguistic factors, such as the debate around geoengineering, could intervene to impose a polemic interpretation of example (7). Determining whether a particular use of negation is polemic or descriptive is thus a question which, in many cases, depends not only on the linguistic features of the utterance, but also on the co(n)text in which it is embedded.

Additional factors which indicate a descriptive interpretation are predicational elements with no focus:

- (8) Dire qu'il faut essayer de limiter les émissions de gaz à effet de serre de 40 à 70% d'ici le milieu du siècle pour ne pas dépasser les 2°C de réchauffement revient à fixer une tâche considérable. (réchauffement_2014)

To say that we need to limit GHG emissions between 40 and 70% from now until the middle of the century in order not to surpass 2°C warming, amounts to a considerable task. (réchauffement_2014)

The scope of the negation is an infinitival clause (“not to surpass 2°C warming”) in which there is no focus and thus no potential for contrast. In other words, the content of the infinitival clause is not asserted, which means that it cannot by itself form a pov, much less a contrast between several pov.

Other cases are less clear-cut:

- (9) – Peut-on lier cette augmentation de l'activité cyclonique dans l'Atlantique nord au réchauffement climatique ?
 – Plus globalement, la question du lien entre activité cyclonique dans le monde et réchauffement du climat fait l'objet d'un vif débat dans la communauté scientifique internationale et il ne se dégage pas, pour l'heure, de consensus dans un sens ou dans l'autre. (climat_2008)
 – Could this increase in cyclone activity in the North Atlantic be tied to climate change?
 – More globally, the question of the link between cyclone activity and climate change is the object of fierce debate within the international scientific community, and there is at this moment no consensus in one direction or the other. (climat_2008).

On one hand, the negation in example (9) reads as a simple reformulation of the preceding assertion regarding the ‘fierce debate’, thereby lending itself to a descriptive interpretation. On the other hand, the negation seems to contradict a commonly held view that there is an established link between warming and cyclone activity. In light of this

contextual information, the negation could be interpreted as polemic. When faced with cases such as example (9) in this study, we systematically analysed the negations as polemic, because the fundamental polyphony of the negation is susceptible to being triggered by contextual factors. However, there are also cases where we were unable to identify such factors, which means that several occurrences of negation may have been categorised as descriptive, while authentic readers of the blogs would interpret them differently.

With this uncertainty in mind, the results of the analysis of the 120 examples are summarised in Table 2.4:

Table 2.4. Polemic and descriptive negations.

	2007		2008		2013		2014		Total	
	Pol	Des	Pol	Des	Pol	Des	Pol	Des	Pol	Des
Climat	7	3	8	2	6	4	5	5	26	14
Climatique	5	5	7	3	6	4	8	2	26	14
Réchauffement	9	1	7	3	9	1	6	4	31	9
Total	21	9	22	8	21	9	19	11	83	37

The numbers are remarkably stable across all the subcorpora and, more importantly, across the periods 2007–2008 (71.7% polemic negations) and 2013–2014 (66.7% polemic negations). While taking into account that the partially subjective nature of the analysis (see example (6) above) may influence these results to some extent, there appears to be very little variation in the distribution of descriptive and polemic negations over time. This means that we can rule this out as an influencing factor when looking at negation as a measure of controversy, at least in this instance. The question is whether a qualitative sample analysis of the reference corpus can produce a different result. Table 2.5 shows the distribution of a random selection of 100 negations from an open search of ‘pas’:

Table 2.5. Polemic and descriptive negations in the reference corpus.

Polemic	Descriptive	Total
63	37	100

Comparing tables 2.4 and 2.5, there appears to be no difference in the distribution of polemic and descriptive negation between utterances on climate change and those that concern other topics. This seems to fit well with the quantitative results in table 2.1, where climate change did not appear to be a particularly controversial topic on French language websites. The question is whether negation correlated with an undeniably controversial subject might give us a different distribution, i.e. a larger majority of polemic negations. Let us look more closely at a word that was clearly associated with negation in table 2.1, namely ‘Trump’. A qualitative analysis of a random sample of 100 negations appearing +/- 5 words from ‘Trump’ gave the following distribution (table 2.6):

Table 2.6. Polemic and descriptive negations correlating with ‘Trump’.

Polemic	Descriptive	Total
74	26	100

While these numbers indicate that the likelihood of polemic negation increases with the contentiousness of a topic, the uncertainty of many cases due to contextual factors prevents us from drawing any clear conclusions regarding this relation.

4. Concluding remarks

In this study we set out to track the contentiousness of CC by studying negations in blog posts from two different time periods: 2007–2008 and 2013–2014. The underlying assumption was that negation is uniquely placed to perform a refutative function. Even without any other syntactic or lexical marker, negation can turn a proposition on its head, creating a polemic opposition between two points of view. Seeking to explore the extent to which the polemical nature of CC and its societal implications transpire through the use of negation, we formulated the following hypothesis: negations in relation to climate change are more frequent in the time period 2013–2014 than 2007–2008, because of the increasing politicisation of the issue in the intervening years.

Our material consisted of the NTAP French blog corpus, containing posts from 2,033 French blogs, in addition to the French Web 2017 corpus, serving as a reference corpus for our study. The latter was first used to explore two initial research questions serving as a basis for our

study: 1. Does negation correlate more frequently with lexical items associated with controversial topics than with those that are considered less controversial? 2. If such a metric appears to be fruitful, does climate change prove to be a controversial issue relative to others? By correlating negation with different words associated with varying degrees of controversy, including ‘tourism’ and ‘Trump’, we found a consistent pattern of increasing likelihood of negation with an increasing degree of controversy. This would seem to indicate a correlation between the contentiousness of an issue and the frequency of negations being used when talking about it. However, the same test also revealed a low frequency of negation associated with climate change, indicating that this issue is relatively uncontroversial in French language texts online. Moving on to our study of the NTAP blog corpus, we searched for the word ‘pas’, in combination with ‘climat’, ‘climatique’ and ‘réchauffement’, which yielded 3,022 occurrences of ‘pas’ for the years 2007–2008, and 7,768 occurrences for the years 2013–2014. As many of the blog posts in the NTAP corpus have little to do with the climate issue, the relative frequency of negation gave us little indication of the degree to which controversies surrounding CC were reflected in the use of this linguistic marker. However, we were able to isolate the climate issue in the corpus by looking solely at the frequency of negations co-occurring with ‘climatique’ relative to its total frequency during each time period. The results showed that there was 11.2 per cent likelihood of a negation co-occurring with ‘climatique’ in 2007–2008, and 13.7 per cent in 2013–2014. Perhaps more interestingly, the number for 2013, the year of the IPCC’s 5th Assessment Report, was as high as 14.6 per cent, which would seem to indicate that the frequency of negation follows the topic’s degree of contentiousness.

The qualitative analysis set out to correct any erroneous conclusions possibly arising from the quantitative analysis. As negation can have both a polemic and descriptive interpretation, it was important to map out any discrepancies in their distribution across each time period. The analysis of 120 random occurrences of negation in the material revealed a remarkably stable distribution of around 70 per cent polemic negations, thus removing the descriptive negation as a relevant variable in the comparison. Two control analyses produced similar results. First, an analysis of random occurrences of the negation ‘pas’ in the reference corpus gave 63 polemic negations out of 100, while the proportion of polemic negations associated with ‘Trump’ was 74 out of 100. The difference between these two samples could be explained by the many

controversies surrounding Donald Trump, although they could also be the product of chance, coupled with the inherent uncertainties of many instances where the larger context comes into play.

In closing this study has opened up two main avenues for further research. First is the hypothesis that the proportion of descriptive negation increases as the contentiousness of an issue decreases. Our analyses may have revealed such a tendency but a study exploring more data in a combined quantitative and qualitative perspective could expose such a pattern more clearly. Secondly, we looked at negation related to the topic of CC without considering the large array of subtopics represented in the material, such as mitigation, adaptation, international negotiations, technological innovation, and climate science. A computer-generated topic modelling analysis (see Tvinnereim et al., 2017) could reveal interesting correlations in the use of negation on various subtopics in the material.

Endnotes

1. The metalinguistic negation also opposes two pov. However the second pov does not refute the content of pov₁, but the choice of a lexical item, e.g. ‘Paul is not big, he’s huge’. We will not discuss this use of negation in the present chapter.
2. The current study is not suited to test such a hypothesis, as the two subcorpora treat the same topic.
3. The latter of the two interpretations could also be analysed as a case of *interlocutive dialogism* (Bres and Nowakowska 2008).

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