Different contexts, different "stories"? A linguistic comparison of two development reports on climate change

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1 Introduction

Climate change is one of the most pressing issues facing humanity today. While some people firmly believe that climate change to a large extent is anthropogenic and that it is our moral obligation to current and future generations to do something about it, others are dismissive of the issue and equally firm in their belief that any change has natural causes and that nothing can or ought to be done (Leiserowitz, 2007). Human values and belief systems have a clear influence on human responses and lead to different attitudes and preferences for courses of action or inaction. Previous research (e.g. Hulme, 2009) has shown that the meaning that people ascribe to climate change (e.g. their understanding of the phenomenon, their perception of risks involved, the corresponding value judgments and emotional reactions) is closely related to how climate change is portrayed in the communication. It is obvious that language plays a crucial role in this. However, the issue has so far given rise to little linguistically oriented research (Nerlich et al., 2010).

The aim of this paper is to identify and describe some linguistic features related to the textual interaction taking place between different voices in two reports focusing on climate change challenges, and to explain how these features function in an argumentative perspective. The reports are the United Nations Development Programme (UNDP) publication *Human Development Report 2007/2008* (hereafter HDR) and the World Bank's *World Development Report 2010* (hereafter WDR). These reports from two global actors provide influential policy advice which is based on current scientific knowledge about climate change.

The motivation for the study reported on here is twofold. First, issues related to the communication of climate change are hotly debated in numerous settings involving politics, media and the general public, and it is obvious that language use is at the heart of this debate (Bowman et al., 2009; Budescu et al., 2009). Second, the two reports we focus on both provide situational descriptions of climate change issues and they offer policy advice. To some extent they have overlapping audiences. However, given the different institutional (and to some extent temporal) contexts they are produced in, they are likely to tell different "stories". If this is the case, they may present policymakers with different input on which to base their decisions.

In this paper, then, we consider what linguistic resources the two reports draw on to convince their audiences of the soundness of their message. According to Hyland (2005), written knowledge-based discourse is not objective and impersonal, but rather represents "a persuasive endeavour

involving interaction between writers and readers" (p. 173; for a similar view, see Fløttum et al., 2006). A different approach to Hyland's interaction in text, but nevertheless with a similar conception of interaction between voices, is linguistic polyphony, implying that texts are seen as multivoiced (see section 3). Applying an overarching polyphonic perspective, we will in this paper compare how a selection of linguistic features related to writer/reader interaction and to interaction with broader communities are used in the two reports from the UNDP and the World Bank, respectively. We will show that some of these linguistic resources are exploited differently in the two reports, and argue that this contributes to the construction of two different "stories" about climate change in a development perspective.

We begin by presenting a macro-linguistic overview of our empirical material. Then we move on to describe our linguistic approach in some more detail, before we undertake the comparative analysis of the two reports. Finally, we recapitulate the findings from the comparative analysis through a discussion of how the studied linguistic features may support a hypothesis of the two reports telling different stories.

2 The two reports in a macro-linguistic perspective

As already mentioned, we analyse two development reports on climate change, the *Human Development Report 2007/8* (HDR) and the *World Development Report 2010* (WDR). For reasons of space, we limit our discussion to the *Overview* section of the reports. This selection is further justified by the fact that the *Overview* is "by far the most read and influential" part of the reports (Gasper et al., submitted). The Overviews are of approximately the same length, HDR about 11,200 words and WDR roughly 10,900 words.[1] The Overviews can be seen as summaries of the entire reports. They present in a condensed form the "story" that is told through the different chapters of the reports.

In discourse analysis, the notion of genre is important. The reason is that genre, understood as some kind of social practice realised through a concrete text, is part of the context which should be brought into the interpretation of a text (Adam, 2005; Wodak and Chilton, 2005). The reports we study constitute a specific genre where, stated in very general terms, the aim is to outline a particular problem or issue (in our case how to deal with both climate change and development) and to recommend actions by means of different tools in order to overcome the described challenge.

Both Overviews display features that are traditionally considered as scientific and political, that is, they present claims based on scientific knowledge and they try to convince their readers about specific policies developed through recommended actions. The texts thus represent a mix of what is

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[1] In addition to notes and references, the WDR Overview also contains text boxes with additional material which strictly speaking is not an integral part of the running text and therefore not included in the analysis.

traditionally understood as scientific and political discourse, respectively (see Fløttum and Dahl, In press). In St. Clair's terms (2006), we see a co-production of knowledge and politics. Recent linguistics research clearly shows that the traditional conception of scientific discourse as objective or neutral is outdated (Fløttum et al., 2006; Hyland, 1998, 2000; Prelli, 1989). Scientific reporting is becoming continuously more rhetorical. However, our texts are neither strict scientific reporting nor political manifestos. Rather, they are instantiations of genres which interpret scientific knowledge – an interpretive genre (see Gasper, 2010), with the purpose of proposing a convincing development policy, and where the actions called for might be clearly political. Further, they are intended to be policy-relevant texts addressed to a wide audience.

Our point of departure is that the two Overviews represent the textual outcome of specific contextual and rhetorical situations. Drawing on science-based knowledge and setting forth policy claims, the ultimate aim of the authors of both reports is to persuade readers that the claims are well-founded and acceptable. In order to achieve this, various positions with regard to the claims are incorporated. These positions are manifested in a set of linguistic features, which will be discussed below.

3 Linguistic approach

As stated above, our linguistic approach takes its point of departure in the notions of polyphony (Nølke et al., 2004) and also incorporates Hyland's notion of interaction in text (Hyland, 2005, 2009). The interpretation of a text depends to a large extent on the role of the voices which the writer "lets into" the text, on the role the writer gives to his or her own voice, and not least on the interaction between these different voices. Hyland (2005, 2009) distinguishes between the notion of stance and engagement. *Stance* refers to the writer's textual "voice", conveying judgements, opinions and commitment, through linguistic devices such as hedges (e.g. *may, possible*), boosters (*definitely, of course*), attitude markers (*admittedly*, *unfortunately*) and self-mention (*we, our*), while *engagement* refers to "the ways that writers rhetorically recognize the presence of their readers to actively pull them along with the argument, include them as discourse participants, and guide them to interpretations" (Hyland, 2009: p. 74). The rhetorical resources that perform these functions are, according to Hyland, reader pronouns (*you*), directives (*consider the following statement*), questions (*Should we not…?*), appeals to shared knowledge and asides (*-as I believe-*).

We find Hyland's (2005, 2009) division of interaction into stance and engagement useful and illustrative, particularly as tools to explain the effects different kinds of interaction of various voices may have (see section 4). However, we do not always agree with his classification of particular instances in the various categories. Further, he does not integrate in his notion of interaction the presence of voices other than those of the writer and the reader. In the present study we therefore

integrate Hyland's notion of interaction into *linguistic polyphony* (multi-voicedness), thus making the ScaPoLine theory our overall theoretical framework (ScaPoLine is short for 'La théorie scandinave de polyphonie linguistique'; see Nølke et al., 2004). Our overarching research questions can be formulated as follows: which voices are present, who says what and how, and how do different voices interact? More precisely, we will study the use of different argumentative strategies realised through polyphonic, epistemic, deontic[2] and axiological value markers (see below).

Like other linguistic and dialogic approaches which have inspired our work (e.g. Bakhtine 1984; Bres and Mellet, 2009[3]), ScaPoLine is based on a conception of language as fundamentally dialogical in nature and thus presents itself as an alternative to the established idea of the uniqueness of the speaking subject. The speaking subject is not unique, in the sense that he/she/they can include other voices in one and the same utterance. A classical example of this is reported speech (citations) where one voice is explicitly integrated in the writer's own voice (with different functions). However, the obvious advantage of the ScaPoLine approach is that it helps to reveal not only explicit voices, such as reported speech, but also implicit voices, in a more or less hidden interaction through devices such as pronouns, sentence connectives, modal expressions, adverbs, negation, presupposition, information structure and many more. When the polyphonic structure is identified, this opens up for possible interpretations, but also imposes constraints on the interpretation of the polyphonic configuration which may be developed in a text.

For illustrative purposes, we will show in a simplified way how the theory can be applied, by considering an example of polemic negation, with refutative meaning, taken from the HDR text (bold is used in all the examples to draw attention to the items in focus):

(1) Importantly, carbon taxation does **not** imply an increase in the overall tax burden. (HDR, p. 11)

pov 1: carbon taxation does imply an increase in the overall tax burden
pov 2: pov 1 is not valid

In this clause, there are two points of view (pov): one stating that 'carbon taxation does imply an increase in the overall tax burden' (pov1) and another qualifying this as not valid or false, indicated by the negation *not* (pov2). While the speaker is responsible for the latter point of view (pov2), the isolated utterance does not indicate who is the source of the first point of view (pov1). The source

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[2] For methodological and practical purposes, we have made a distinction between polyphonic, epistemic and deontic markers, but theoretically they can all be considered as polyphonic.

[3] The ScaPoLine theory is clearly inspired by the work of Bakhtine (for example Bakthine, 1984), but also by the ideas of linguistic polyphony as presented by Oswald Ducrot (see Ducrot, 1984). For the French tradition, a useful overview can be found in Bres and Mellet (2009). The ScaPoLine theory takes a micro-linguistic point of departure for its analyses. However, its aim is to constitute a bridge to the textual and macro-linguistic level and thus be complementary to the more discourse- or dialogically-oriented approaches (see Gjerstad, 2011).

might or might not be identified through contextualisation; for the present example, this would probably mean knowledge from some economic source. The speaker instance here corresponds to the authors of HDR, and the relation to the positive pov1 is one of non-responsibility – or more precisely, a refutative relation.

In the interpretation of an utterance, it is important to determine the various points of view which are manifested in the text, to identify their sources, be it the speaker him- or herself, another person or group of persons, more or less clearly defined, or some general opinion or doxa, and finally to establish the relations between the different points of view presented. The strategy of using negation, as in the example above, is a subtle rhetorical way of polemising without identifying with whom.

Let us look at another example with the contrastive connective *but* in its concessive sense, taken from the WDR text:

> (2) Two arguments often heard are that these transition costs are unacceptable given the urgent need for other more immediate investments in poor countries, and that care should be taken not to sacrifice the welfare of poor individuals today for the sake of future, possibly richer, generations. There is validity to these concerns. **But** the point remains that a strong economic argument can be made for ambitious action on climate change. (WDR, p. 7)

The concession expressed by the text segment preceding the connective *but* represents one point of view and the claim following *but* another one. The linguistic instruction inherent in *but* says that the speaker is identifying with the last point of view. Without opposing the first point of view (which is conceded and agreed to), the speaker just emphasises – through *but* – that what counts here and now is that *the point remains that a strong economic argument can be made for ambitious action on climate change.* This is another linguistic tool used in both Overviews and which may be considered as a strategy of foreseeing a coming objection to the claim introduced by *but.* Like the polemic *not,* the concessive *but* is a strategy of including other points of view, which may correspond to different voices in the real world. This inclusion is done without identifying the voices and where the linguistic marker indicates an interpretation of the relations between the manifest voices in the "hidden" interaction.

The study of polyphonic expressions and the configuration created by such expressions contribute to the identification of a visible "self" and more or less visible "others" in a text. It helps to clarify complex multi-voiced sequences with both explicit and implicit positions, manifested in the presence of cited and named individuals or implicitly through different linguistic polyphonic markers, as shown above. This theoretical framework, where interaction is studied in a polyphonic perspective, will constitute the point of departure for the analyses to be undertaken in section 4.

4 Comparative linguistic analysis of the two reports

We have already established that both HDR and WDR constitute a mix of scientific and political discourse; they are hence instantiations of discursive heterogeneity. However, our analyses not unexpectedly reveal that policy takes precedence over science: the constellations of linguistic features in the two texts clearly reflect that the purpose of convincing readers about the proposed development policy dominates the purpose of ("objectively") describing and explaining scientific knowledge. The science is discussed, interpreted and framed within, and integrated into, the two institutions' own conceptions of climate change, supported by their respective world views. This is accomplished through an extensive use of devices which enable different kinds of polyphony and interaction.

As a point of departure for the comparison between the two texts, we have undertaken a quantitative analysis by means of the lexical analysis software WordSmith. The tool WordList generated a list of all the words in each text on a frequency basis and then allowed for a comparison of the two lists. A selection of words which are relevant to the issues analysed in this paper is presented with their respective frequencies in Table 1 in the Appendix. The frequencies referred to in the analyses below are taken from this table.

We present our examples of voices and interaction in six subcategories (4.1-4.6), starting with the most explicit interaction, involving identified sources that are external to the text. The categories analysed in 4.3-4.6 are all examples of implicit interaction, where the last three ones constitute different kinds of modalisation.

4.1 Interaction involving explicitly identified external voices

We start by exploring to which extent the authors include explicit external voices in the text. In addition to notes referring to various scientific and other sources without direct quotes, some scientific voices are referred to directly in the WDR text, as in the following examples:

(3) So **economists** continue to disagree on the economically or socially optimal carbon trajectory. (WDR, pp. 7-8)

(4) In the words of the Fourth Assessment Report of **the Intergovernmental Panel on Climate Change (IPCC),** a consensus document produced by over 2,000 **scientists** representing every country in the United Nations: "Warming of the climate system is unequivocal." (WDR, p. 4)

(5) **McKinsey**, for example, estimates that […]. **McKinsey** does point out that […]. (WDR, p. 9)

HDR, on the other hand, makes room for some individual non-scientific voices in their argumentation, voices that stem from renowned and famous persons:

(6) *"Human progress is neither automatic nor inevitable. We are faced now with the fact that tomorrow is today. We are confronted with the fierce urgency of now....Over the bleached bones and jumbled residues of numerous civilizations are written the pathetic words: Too late."* Delivered in a sermon on social justice four decades ago**, Martin Luther King**'s words retain a powerful resonance. At the start of the 21st Century, we too are confronted with the "fierce urgency" of a crisis that links today and tomorrow. That crisis is climate change. (HDR, p. 1; italics in original)

(7) Twenty years ago **Chico Mendes**, the Brazilian environmentalist, died attempting to defend the Amazon rainforest against destruction. Before his death, he spoke of the ties that bound his local struggle to a global movement for social justice: "At first I thought I was fighting to save rubber trees, then I thought I was fighting to save the Amazon rainforest. Now I realise I am fighting for humanity." (HDR, p. 6)

The above examples, which can be interpreted as "argumentation by authority" (Ducrot, 1994), represent some of the few explicit sources brought directly into the text. By integrating quotes from well-known and respected individuals (Mahatma Gandhi is also mentioned, although not directly cited, in HDR, p. 3), the authors try to attribute authority to their own claims. We will see below to what extent explicit – but not identified – voices are introduced through the polysemantic pronoun *we*.

4.2 Interaction involving a mix of external and internal voices (through WE)

Polyphony, or multi-voicedness, is a feature characterising both climate change and development debates. On the overarching general level, the two reports are both "development voices". In addition, WDR represents a voice of economics, while HDR represents a human rights voice. At the textual and micro-linguistic level, the reports display different strategies regarding how these voices are represented explicitly, in other words how the authors are directly present in the text. WDR uses the pronoun *we* only eight times (and *our* five times) while the number of occurrences of *we, us, our* in HDR is 43, 31 and 22, respectively. WDR thus assumes a (traditional) scientific role by allowing the facts and claims to appear in a less mediated form than HDR. Typical linguistic features of this are active verbs with inanimate subjects, as in *Most models suggest ...* (p. 14), and impersonal constructions, as in *There is scope for developing countries to shift to lower-carbon trajectories ...* (p. 2) and *It is estimated that ...* (with reference to source; p. 5). The HDR authors, on the other hand, are directly present throughout the report by their frequent use of *we*. This pronoun can be both inclusive (with various referential scope) and exclusive ('we' versus 'you/they') and can thus play an interesting role in the construction of in- and out-groups as well as in the interaction with readers. The referential scope issue is particularly relevant here. Who are included in the pronoun *we*? Let us look at some examples.

As seen in example (6) above, after referring to the quote by Martin Luther King, the HDR authors continue as follows:

(8) At the start of the 21st Century, **we** too are confronted with the "fierce urgency" of a crisis that links today and tomorrow. That crisis is climate change. (HDR, p. 1)

In this case *we* seems to include the whole of mankind. The same all-inclusive reference is found in the following:

(9) Today, **we** are witnessing at first hand what could be the onset of major human development reversal in our lifetime. (HDR, p. 1)

The interpretation of *we* in the following example is less obvious. Those who *understand* could be experts, such as climate scientists, or perhaps simply the authors of the report:

(10) Some commentators continue to cite uncertainty […] as grounds for a limited response to climate change. […] uncertainty cuts both ways: the risks could be greater than **we** currently understand. (HDR, p. 2)

The next example shows the most transparent reference of *we* in HDR, clearly referring to the authors:

(11) In the *Human Development Report 2007/2008* **we** address these questions. Our starting point is […]. (HDR, p. 2)

It has often been pointed out that the reference for the pronoun *we* is not always clear and thus represents an interpretative challenge (e.g. Fløttum et al., 2006). For a proper interpretation, the verb which the pronoun is directly combined with is important. In example (11) it is obvious that only the authors can "address" the announced questions. Other indicators may be found in the immediate cotext, such as the reference to the report in the same example. Space does not allow us to discuss all the *we* occurrences here, but our analysis indicates that there are three main types of *we* references: the whole of mankind, experts (not specified, but could be scientific, development researchers, economists) and the authors. These instances of *we* contribute to a quite complex mix of internal (the authors) and external (unidentified) voices. It should also be noted that the use of *we,* with its inclusive value, may have a stronger engaging effect on the reader (for psychological research supporting this view, see Haddad et al., Forthcoming).

4.3 Interaction involving implicit voices (through BUT, HOWEVER and NOT)

The authors of WDR may be seen as "absent" through their modest use of personal pronouns. However, they are very much present through other devices, such as specific polyphonic markers and value markers (see below). We will here look at examples from both texts of the negation *not* in its polemical use and the contrastive connectives *but* and *however* in their concessive use (see above) which show how external or internal implicit voices can be integrated in implicit interaction.

There is a difference between the two reports regarding frequency: the number of *not* occurrences is 50 in HDR and 34 in WDR, while the number of occurrences of *but* and *however* is 51 (31+20) in HDR and 61 (54+7) in WDR. This difference seems too modest to indicate different ways of argumentation. It is nevertheless interesting to see how these devices are used:

> (12) Climate change policy is **not** a simple choice between a high-growth, high-carbon world and a low-growth, low-carbon world—a simple question of whether to grow or to preserve the planet. (WDR, p. 1)

In this example, the authors take a clear position by pointing to the complexity of the climate change issue, refuting an underlying voice saying that "climate change policy is a simple choice between a high-growth, high-carbon world and a low-growth, low-carbon world", but without pointing to the one(s) who might hold this point of view.

> (13) Future generations are **not** the only constituency that will have to cope with a problem they did not create. The world's poor will suffer the earliest and most damaging impacts. (HDR, p. 3)

Stance is clearly marked in this example as well, refuting that "future generations are the only constituency that will have to cope with a problem they did not create". It is interesting that another "constituency" is explicitly stated here: "the world's poor".

> (14) Rich nations and their citizens account for the overwhelming bulk of the greenhouse gases locked in the Earth's atmosphere. **But,** poor countries and their citizens will pay the highest price for climate change. (HDR, p. 3)

This example of the concessive *but* implicitly agrees with the voice pointing at the responsibility of the "rich nations" in the climate change issue. In contrast to this, the authors set up a more important voice following *but*, which they associate with, and which is the decisive one in their argumentation: the "poor countries and their citizens" will pay the highest price.

> (15) Cities like London and Los Angeles may face flooding risks as sea levels rise, **but** their inhabitants are protected by elaborate flood defence systems. (HDR, p. 3)

The same argumentative orientation characterises this example where it is conceded that "rich" cities may face particular risks, but where the voice of the authors emphasises that the inhabitants in these cities are "protected" (in an implicit contrast to inhabitants of cities in poor countries).

The following example contains a series of polyphonic markers and illustrates the complexity that the interaction between implicit and non-identified voices may represent. The voice of the authors is, however, clearly stated in the last sentence:

> (16) Immediate action is needed to keep warming as close as possible to 2°C. That amount of warming is **not** desirable, **but** it is **likely** to be the best we can do. There is**n't** a consensus in the

economic profession that this is the economic optimum. There is, **however**, a growing consensus in policy and scientific circles that aiming for 2°C warming is the responsible thing to do. This Report endorses such a position. (WDR, p. 3)

In addition to demonstrating how the implicit interaction between different voices may be represented, these examples also show that HDR assumes a spokesperson role for human beings in general and for the poor in particular to a larger extent than WDR, which takes on a more scientific and economics-related role. We further see a more "imposing" role taken on by WDR in the extensive use of the conclusive marker *so* (22 occurrences; none in HDR). Here are some examples, where the push for "climate-smart policies" and innovation is obvious:

(17) **So** both the mitigation and the adaptation challenges are substantial. But the hypothesis of this Report is that they can be tackled through climate-smart policies that entail acting now, acting together (or globally), and acting differently. (WDR, p. 10)

(18) Innovation is also needed in transport, building, water management, urban design, and many other sectors that affect climate change and are in turn affected by climate change—**so** innovation is a critical issue for adaptation as well. (WDR, p. 11)

4.4 Interaction through epistemic markers

The phenomenon of hedging is a common device in scientific discourse (Hyland, 1998). Without going into a comprehensive discussion of what should be considered a hedge, we just refer to the current and somewhat imprecise definition of hedging devices as expressions which are "toning down" or "mitigating" the propositional content of an utterance. Central among these are modal verbs like *may, might, can* and *could.* The frequency of these devices is as follows in HDR and WDR, respectively: 7, 3, 25, 42 and 7, 5, 55, 35. We notice the relatively high frequency of *can* in WDR. These words may of course convey quite different semantic content, but also the epistemic value of toning down the truth value of the sentence in which they occur, adding uncertainty to the propositional content (for details, see Lyons, 1977: pp. 788-849; Vold, 2008). This may in fact be considered as another example of polyphony, where the authors add their point of view or voice as a comment to the un-nuanced and underlying point of view, which may stem from another voice, or which may also be their own, but perhaps at another stage of their work. Thus we have an interaction where an expressed uncertainty is at stake.

(19) Growth is unlikely to be fast enough to help the poorer countries, and it **can** increase vulnerability to climate hazards. (WDR, p. 7)

(20) Second-generation biofuels that rely on nonfood crops **may** reduce competition with agriculture by using more marginal lands. But they **could** still lead to the loss of pasture land and grassland ecosystems and compete for water resources. (WDR, p. 16)

(21) The previous pages describe the many steps needed to manage the climate change challenge. Many read like the standard fare of a development or environmental science textbook: improve water resource management, increase energy efficiency, promote sustainable agricultural practices, remove perverse subsidies. But these have proven elusive in the past, raising the question of what **might** make the needed reforms and behavior changes possible. The answer lies in a combination of new pressures, new instruments, and new resources. (WDR, p. 18)

In these examples, the modal verbs bring a voice of uncertainty into the argumentation. However, the modal verb *can* is also a device which emphasises capacity, as in the following example:

(22) High-income countries **can** and must reduce their carbon footprints. (WDR, p. 1)

The majority of the occurrences of *can* in WDR convey the meaning of "being able to". This underlines a more action-oriented emphasis in WDR than in HDR.

A final point to be mentioned under the heading of epistemic markers is the use of *likely,* especially in WDR (14 occurrences versus 4 in HDR). Here is an example:

(23) Sea levels could rise by one meter this century, threatening more than 60 million people and $200 billion in assets in developing countries alone. Agricultural productivity would **likely** decline throughout the world, particularly in the tropics, even with changes in farming practices. (WDR, pp. 4-5)

The modifier *likely* is in fact also one of many expressions used by the IPCC in their reports, but in that context *likely* has a precise and statistically calibrated meaning. When referring to IPCC and at the same time using *likely* in a general sense, the WDR text may lead to confusion in such cases (see also Budescu et al., 2009).

4.5 Interaction through deontic expressions

Deontic modality is commonly associated with expressions of permission and obligation, representing the speaker's attitude towards a course of action, including wishes, requests and advice (Vold 2008: pp. 73-74). In the following, we will restrict our discussion to expressions of obligation, such as *must, should, need(ed).* It is noteworthy that the frequency of these expressions is much higher in WDR than in HDR: 16, 2 and 28 versus 6, 7 and 7, respectively. This is one of the clearest differences between the two documents and further emphasises the action orientation in WDR.

Deontic modality seems initially to fit well into our polyphonic frame in this paper dealing with stance and engagement. However, it may be seen as less clearly polyphonic than epistemic modality since it does not serve to express a speaker's attitude toward the truth of what is said (through an epistemic voice superimposed on the presented argument), but in some way toward the execution of

a proposed action (see also Gjerstad, 2011: pp. 256-257). In fact, we see it as a modality related both to stance (expressing what the authors see as necessary) and to engagement (the authors calling upon the audience in an explicit way), as in the following examples:

(24) Immediate action is **needed** to keep warming as close as possible to 2°C. (WDR, p. 3)

(25) Immediate and comprehensive action is not feasible without global cooperation, which requires a deal perceived as equitable by all parties—high-income countries, which **need** to make the most immediate and stringent efforts; middle-income countries, where substantial mitigation and adaptation **need** to happen; and low-income countries, where the priority is technical and financial assistance to cope with vulnerability to today's conditions, let alone unfolding changes in the climate. The deal **must** also be effective in achieving climate goals, incorporating lessons from other international agreements and from past successes and failures with large international transfers of resources. (WDR, p. 20)

(26) And while the sources of funding might be separate, the spending of adaptation and mitigation resources **must** be fully integrated into development efforts. (WDR, p. 22)

Here is an example from the HDR text, also with deontic expressions, but in a somewhat "milder" tone of obligation:

(27) Adaptation financing requirements **should** be seen as 'new and additional' commitments. That is, they **should** supplement rather than divert existing aid commitments. (HDR, p.15)

4.6 Interaction through axiological markers

Scientific knowledge is presented in factual discourse. Even if there may be national differences in how natural scientists perceive their role and how they are encouraged to contribute in the climate debate (see e.g. Cornell, 2010), they typically perceive themselves as "value free observers of the system" (Cornell, 2010: p. 120). In a policy setting, however, the claims from the scientists must necessarily be framed in a value-laden context, since prioritising is inherent in action-oriented communication. Thus, in polyphonic terms, value-laden points of view may be superimposed on the factual scientific discourse.

In linguistics, evaluation is a concept that is not easily described in terms of its linguistic realisation (see e.g. contributions in Hunston and Thompson, 1999; Del Lungo Camiciotti and Tognini-Bonelli, 2004). It is perhaps most easily recognised at the lexical level, but the phenomenon is far more sophisticated than that. Evaluation in text can also be achieved by syntactic and textual means and may even be implied (Shaw, 2004). In the present context we restricted our investigation to lexical items that are generally seen to express axiological value, such as *good*, *bad* and *interesting* (e.g. Kerbrat-Orecchioni, 1980). It turned out that most of the items occurred only once or a few times in one or both texts. However, two adjectives, *important* and *dangerous*, were found to be of particular interest. Both occurred in both texts, but with different frequencies.

Important had a relatively high frequency in both texts (10 in HDR and 7 in WDR), while *dangerous* was frequent only in HDR (22, versus 2 in WDR).

So, what is considered important in the two reports? Here are some examples:

(28) Climate change demands urgent action now to address a threat to two constituencies with a little or no political voice: the world's poor and future generations. It raises profoundly **important** questions about social justice, equity and human rights across countries and generations. (HDR, p. 2)

(29) Climate change confronts us with enormously complex questions that span science, economics and international relations. These questions have to be addressed through practical strategies. Yet it is **important** not to lose sight of the wider issues that are at stake. The real choice facing political leaders and people today is between universal human values, on the one side, and participating in the widespread and systematic violation of human rights on the other. (HDR, p. 2)

(30) More **important**, a credible commitment by high-income countries to drastically reduce their emissions would stimulate the needed RD&D of new technologies and processes in energy, transport, industry, and agriculture. (WDR, p. 2)

(31) Social policies will become more **important** in helping people cope with more frequent and persistent threats to their livelihoods. Social policies reduce economic and social vulnerability and increase resilience to climate change. (WDR, p. 13)

As we see from these examples, HDR attaches importance to aspects linked to the broad issue of human development and social justice, while WDR focuses on technological development, on helping people cope with climate change and on social policies reducing economic and social vulnerability.

As for *dangerous*, the word in both texts occurred only in combination with *climate change*, as demonstrated in examples (32)-(35):

(32) **Dangerous** climate change is the avoidable catastrophe of the 21st Century and beyond. Future generations will pass a harsh judgement on a generation that looked at the evidence on climate change, understood the consequences and then continued on a path that consigned millions of the world's most vulnerable people to poverty and exposed future generations to the risk of ecological disaster. (HDR, p. 2)

(33) The threshold for **dangerous** climate change is an increase of around 2°C. This threshold broadly defines the point at which rapid reversals in human development and a drift towards irreversible ecological damage would become very difficult to avoid. (HDR, p. 3)

(34) The question, then, is not just how to make development more resilient to climate change. It is how to pursue growth and prosperity without causing "**dangerous**" climate change. (WDR, p. 1)

(35) With mitigation costs estimated to add up to $4 trillion to $25 trillion over the next century, the losses implied by such delays are so large that there are clear economic benefits for high-

income countries committed to limiting **dangerous** climate change to finance early action in developing countries. (WDR, p. 12)

In fact, it may seem as if the collocation *dangerous climate change* takes on term status, referring to a predefined level. HDR refers to the commonly cited 2°C target of global warming, while WDR in example (34), from the first page of the report, uses the expression in inverted commas, followed by a footnote referring to Article 2 of the UNFCCC (1992) describing it somewhat more loosely as "a level that would prevent dangerous anthropogenic interference with the climate system". In a polyphonic perspective, the inverted commas may be interpreted as a signal to the reader that the authors do not accept responsibility for the presented point of view. Interestingly, WDR uses the collocation *dangerous climate change* only twice out of the total of 46 occurrences of *climate change* (about 4 per cent of the instances), while HDR uses it 23 times out of a total of 133 (about 17 per cent of the instances).

5 Discussion

In this paper we have shown how linguistic analyses may contribute to the understanding of how the two texts address the climate change challenge and how they construct their policies. We have taken a theoretical point of departure in the notions of interaction and polyphony, which has allowed us to identify different voices that are present, explicitly or implicitly, and how these voices may interact argumentatively through polyphonic, epistemic, deontic and axiological markers. The comparative analyses have pointed to some differences between the two reports. We will now recapitulate the most important differences in a discussion of how they may support a hypothesis of the reports telling different stories (see section 1). Let us first take a quick look at some contextual aspects which provide a point of departure for the hypothesis of differences.

The reports have an institutional anchoring in two global organisations with the shared goal of fighting poverty, but with different missions expressed on their websites. The World Bank promotes economic growth and aims to "help people help themselves and their environment by providing resources, sharing knowledge, building capacity and forging partnerships in the public and private sectors".[4] The UNDP, on the other hand, has an expressed focus on human rights and are "advocating for change and connecting countries to knowledge, experience and resources to help people build a better life."[5] Another contextual aspect that could be of interest is the fact that the two reports are produced at different times: HDR in a fairly optimistic pre-COP15[6] mode, still believing that action will be undertaken; WDR in the period just before COP15 is about to take place, when it had become clear that little would in fact be achieved at the Copenhagen summit.

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[4]http://web.worldbank.org (About)
[5] http://www.unrol.org/article.aspx?n=undp
[6] Conference of the Parties (COP) of the UN Framework Convention on Climate Change (UNFCCC).

The different missions are to a certain extent manifested through the use of "argumentation by authority" where the two reports bring in completely different kinds of voices: explicit citations of scientific sources in WDR and sources known as fighters for human and social justice in HDR. The scientific and economic focus of WDR is further emphasised through that report's impersonal tone, manifested in impersonal expressions and few instances of the pronoun *we*. HDR, on the other hand, comes closer to a more engaging presentation through its extensive use of this versatile pronoun, which frequently is inclusive in scope. However, at the same time, the use of *we* in HDR contributes to a complex mix of internal (the authors) and external, mostly unidentified, voices.

Both reports are clearly interactive and polyphonic through their frequent use of polemic negation (*not*) and concessive contrasts (*but, however*). This is a kind of implicit interaction which allows subtle argumentation where the authors can avoid indicating who they are discussing with. As regards differences between the two reports, the analysed examples showed that HDR assumes a spokesperson role for human beings in general and for the poor in particular to a larger extent than WDR. The scientific and economics-related role assumed by WDR is clearly manifested as well. The frequency of another marker, the conclusive *so,* further manifests the emphasis put on "climate-smart policies" in WDR.

The phenomenon of uncertainty is crucial in all aspects related to the climate change challenge and is manifested in different ways in the two reports. For this phenomenon, we limited our analysis to epistemic modifiers such as *may, might, can* and *could.* The quantitative analysis of these did not reveal any important frequency differences except for the use of *can,* which was used more than twice as many times in WDR than in HDR. However, it turned out that the majority of the occurrences of *can* in WDR did not convey an epistemic meaning of uncertainty. On the contrary, it was used to express capability, emphasising more action-oriented policies.

The more "aggressive" tone in WDR is further emphasised through its much higher frequency of deontic expressions (such as *must, should, need(ed))* than in HDR. These devices serve to express the authors' attitude towards the execution of a proposed action, calling on the readers of the report in a quite explicit way. In fact, the different use of such expressions of obligation is one of the clearest differences between the two reports. This difference may perhaps be ascribed to the different temporal contexts of the two reports: the felt urgency of action combined with the lowered expectations with regard to the outcome of the COP15 may have contributed to the high use of deontic expressions. However, this remains a hypothesis until other texts of this genre have been studied.

Our frequency-based selection of axiological markers used in both texts led us to focus on two adjectives, *important* and *dangerous*. In the case of *important*, the trend noted above of HDR as drawing the reader's attention to global equity and justice and WDR to the potential of

technological solutions to problems caused by climate change, is again visible. As for *dangerous*, this value marker occurred mainly in HDR, where its frequent co-occurrence with *climate change* clearly marks the authors' stand with regard to this issue. This analysis of value markers has been a simple one. A more sophisticated, semantic, analysis of all the value markers in the two texts might have been able to bring out firmer trends, but the use of these two axiological adjectives seems to support our general impression of the two texts.

We interpret the differences discussed above as sufficiently important to claim that the two reports in fact do tell different "stories". This is not surprising given the institutional differences between the UNDP and the World Bank. However, it is crucial to identify and to point out what the differences consist of in order to get a clear picture of the available input readers may access.

We believe that the findings presented above and the discussion of their possible implications have demonstrated that linguistic analysis of climate change-related texts can contribute to the unveiling of the complexity inherent in climate change discourse. However, one important question which this linguistic analysis has not been able to answer in a satisfactory way is the one related to the interpretation of who the implicit voices correspond to in the real world and whose voices dominate the discourse. For this and a more comprehensive understanding of the texts as a whole, a more integrated research approach in collaboration with other disciplines is necessary (Gasper et al., submitted). In fact, there is currently a call for more multidisciplinary approaches to climate change research (e.g. Bashkar et al., 2010, Pereira et al., 2006). Linguistics should constitute an integrated part of such research (Nerlich et al., 2010). The study reported here is part of one such initiative, realised through the project "Climate change discourse, rights and the poor".[7] This project has as its overarching purpose to investigate how climate change discourse affects approaches and responses to the poor and their rights, particularly with regard to their social rights. The results reported in this paper may constitute a point of departure for further studies into the role of the poor in the climate change debate. An intriguing question in the context of the present documents is whether the poor have an independent voice at all. Our lexically based analysis revealed that the words *poor* and *poverty* appeared 31 and 21 times respectively in HDR and only 8 and 4 times respectively in WDR. As both the UNDP and the World Bank have as their overarching mission to fight poverty, one would expect the poor to be part of the textual interaction. This should be further investigated.

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[7] See http://www.cmi.no/research/project/?1427=climate-change-discourse-rights-and-the-poor

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APPENDIX

Table 1: Word frequencies established through *WordSmith*

ITEM	HDR-text	11,215 words	WDR-text	10,866 words
	Frequency	Percentage	Frequency	Percentage
WE	43	0,383415073	8	0,073624149
US	31	0,276415527	0	
OUR	22	0,196165845	5	0,046015091
NOT	42	0,374498427	30	0,276090562
CANNOT	8	0,071333036	4	0,036812074
BUT	31	0,276415527	54	0,496962994
HOWEVER	20	0,178332597	7	0,064421132
SO	0		22	0,202466413
MAY	7	0,062416408	7	0,064421132
MIGHT	3	0,026749888	5	0,046015091
CAN	25	0,222915739	55	0,506166041
COULD	42	0,374498427	35	0,322105646
LIKELY	4	0,035666518	14	0,128842264
MUST	6	0,053499777	16	0,147248298
SHOULD	7	0,062416408	2	0,018406037
OUGHT	1		0	
NEEDED	7	0,062416408	28	0,257684529
IMPORTANT	10	0,089166299	7	0,064421132
DANGEROUS	22	0,196165845	2	0,018406037