Sustainability **2013**, *5*, 2457-2479; doi:10.3390/su5062457

OPEN ACCESS

sustainability

ISSN 2071-1050

www.mdpi.com/journal/sustainability

Article

A Methodology for Mapping Meanings in Text-Based Sustainability Communication

Mark Brown

BI Norwegian Business School, Nydalsveien 37, 0484 Oslo, Norway; E-Mails: mark.brown@bi.no; Tel.: +47-464-106-98; Fax: +47-232-647-81

Received: 29 March 2013; in revised form: 3 May 2013 / Accepted: 21 May 2013 / Published: 4 June 2013

Abstract: In moving society towards more sustainable forms of consumption and production, social learning must play an important role. Making the assumption that it occurs as a consequence of changes in understanding, this article presents a methodology for mapping meanings in sustainability communication texts. The methodology uses techniques from corpus linguistics and framing theory. Two large databases of text were constructed by copying material down from the websites of two different groups of social actors: (i) environmental NGOs and (ii) British green business, and saving it as .txt files. The findings on individual words show that the NGOs and business use them very differently. Focusing on words expressing concern for the natural environment, it is proposed that the two actors also conceptualize their concern differently. Green business's cognitive system of concern has two well-developed frames; good intentions and risk management. However, three frames—concern for the natural environment, perception of the damage, and responsibility, are light on detail. In contrast, within the NGOs' system of concern, the frames of concern for the natural environment, perception of the damage and responsibility, contain words making detailed representations.

Keywords: social learning; meaning; sustainability communication; text; corpus linguistics; framing; sustainable business; NGOs; stakeholder dialogue

---

1. Introduction

Echoing the call for papers for this special issue, there is a need to "map existing research on sustainability communication" and this article makes a contribution to that project. Social learning must play an important role in moving society towards more sustainable forms of consumption and

production, and one important result from this mapping project will be to increase our understanding of where it works and why. Twenty years on from Rio, however, environmental success stories remain rare and some have questioned whether we are on the right track [1]. We also need to find out where social learning is unable to play an important role in moving society towards more sustainable forms of consumption and production, and explore the reasons why it does not. This knowledge can be fed back into the policy making process.

This article has a working assumption that, to paraphrase the call, organizational (as opposed to social) learning can help business (as opposed to society) move towards more sustainable forms of consumption and production. First popularized by Senge [2], the idea of the learning organization merged easily with that of the greening of business [3,4], and there was also a productive fusion with the developing stakeholder discourse [5,6]. In order to change, the organization needs to learn and in order to learn, it needs to listen. The idea of stakeholder dialogue is attractive, therefore, as a possible mechanism for bringing about green corporate change. However, in reviewing the literature on Corporate Social Responsibility (CSR) and stakeholder dialogue in 2008, O'Riordan and Fairbrass argued that the field was still immature, providing only "a fragmented patchwork of ideas and concepts" [7]. Reflecting this opinion, existing knowledge of stakeholder dialogue's value in bringing about social learning and hence, environmental change, is mixed. Burchell and Cook have argued that NGOs need to think very carefully before engaging in a stakeholder dialogue with business [8,9]. On the other hand, in a recent empirical study from Spain, Agudo-Valiente *et al.* report that "failure to establish good communication channels could have a negative effect on social responsibility" [10]. This discussion is continued in the conclusion to the article.

How can one measure progress in social learning? One way, following Reed *et al*. in their conclusions, is to demonstrate that "a change in *understanding* has taken place" (emphasis added) [11]. This assumption is also implicit in the editors' call for papers, in which they propose that "sustainability communication is a process of mutual *understanding*" (emphasis added). A precondition then, for desired and necessary change to occur, is that meanings held by different actors move towards one another. Although a change of mind is not sufficient for changing behavior, it is usually a necessary first step. Elucidating the respective meanings in the sustainability communications of different social actors ought, therefore, to be an important aspect of this mapping project. With this in mind, a limitation of the work presented in this article is that the results presented are broadly synchronic; the texts on which these findings are based date from a period between 2001 and 2005. In order to look for changes in meanings over time, a diachronic approach is needed in which text databases from the recent past are constructed. The contribution of this article lies in the methodology for mapping meanings that is described. This could be adopted, developed, and applied to different databases for comparison, so that possible changes in meaning over time could be identified.

The literature already contains work which has sought to elucidate differences and similarities in meanings between different groups of social actors active within the greening-of-business field. Allen *et al.* utilize the CRAWDAD Text Analysis System as part of their methodology for mapping meanings in the texts of both buyers and sellers operating within a supply chain context [12,13]. This is the closest methodology to the one presented in this article but there are several other text-based approaches which attempt to elucidate meaning from texts [14–17]. Cognitive mapping methodology is another approach to elucidating meaning. Byrch *et al.* use this technique to compare the

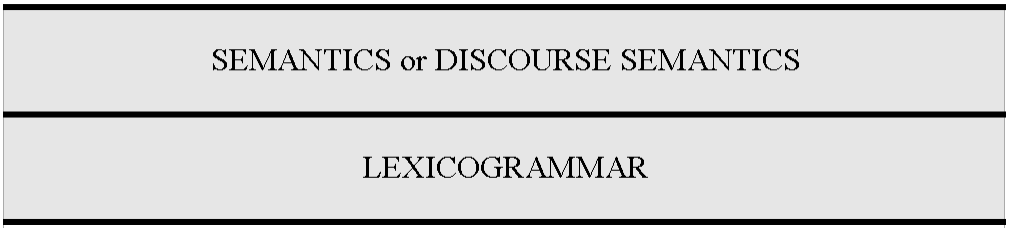
conceptualization of the term *sustainable development* [18]. They have an "S group" consisting of participants promoting sustainable development and an "SB group" of participants promoting sustainable business, which mirrors the two different social actors presented in this article. A similar cognitive-mapping methodology is adopted by Lourdel *et al*. to elucidate student understandings of *sustainable development* [19] and the same approach can be found in other work, notably as a technique for feeding into the policy-making process [20–22].

Returning to the methodology, in this article I have made use of framing theory as it has been proposed by George Lakoff [23,24] in mapping meanings held by two important social actors: environmental NGOs and environmentally-friendly business. The term *framing theory* as it is used in this article is potentially confusing for many readers with a media/political science background. Whereas they will understand framing as a largely conscious and deliberate construction of a particular social reality, the field of semantics understands it as a largely unconscious cognitive phenomenon which accounts for the ways in which words congregate in particular frames in the brain. Framing is just one of many theories about how humans create meaning in a communication process. Narrative and discourse are terms, which are used regularly in environmental journals to denote alternative theoretical approaches [25–30] and rhetoric also appears as a tool of interpretation [31–33]. This contribution presents one method, which I have developed, for mapping meanings. It is empirically-based and makes use of software developed in corpus linguistics to produce presentations, statistically generated from enormous volumes of text, of specific wording patterns. The procedure then takes the findings from the text analysis and employs framing theory to propose the meanings of words and conceptual frames of thinking which are held by the two social actors. This two-stage, analysis-then-elucidation-of-meaning methodology reflects the disjunction between the symbols used to communicate—in this case words—and the meanings that can be constructed from them. Meaning always has to be interpreted. However, the merit of my two-stage methodology is that the elucidation of meaning is underpinned by statistically generated findings of word usage. In the remainder of this section I shall summarize the theory of language which supports the methodology and contextualize it within framing theory.

In his *Introduction to Functional Grammar* [34], Michael Halliday presents his view of language as having three separate layers. In his original argument he includes a lower level of "PHONOLOGY and GRAPHOLOGY." However, it is not relevant for this work and I have dispensed with it so as to focus attention on the middle and upper layers, which I have illustrated in Figure 1. The two layers correspond with the two-stage methodology just described.

> "A language is a complex semiotic system composed of multiple LEVELS or STRATA. The central stratum, the inner core of language, is that of grammar. To be accurate however, we should call it LEXICOGRAMMAR, because it includes both grammar and vocabulary. […] The lexicogrammar is the level of 'wording' in a language […] The wording realizes patterns of another level higher than itself—but still within the system of language: the stratum of SEMANTICS. […] One way of thinking of a 'functional' grammar, like the present one, is that it is a theory of grammar that is oriented towards discourse semantics" [34].

Figure 1. The middle and upper strata in Halliday's three-layer view of language.



As the final sentence in the quotation above implies, systemic functional linguistics, the theory for which Halliday is renowned, seeks to explain the layer of the lexicogrammar in terms of the function to which it is being put; that of constructing meaning. I read Halliday's term *discourse semantics* not as an observable phenomenon but rather as the meaning that most people, most of the time, would construct when reading the lexicogrammar of the text. For Halliday, language encompasses the created meaning in a person's mind as well as the text on the page. In contrast, many communication specialists—among them, George Lakoff—point, quite rightly, to the discontinuity between the lexicogrammar and discourse semantics layers. It is this discontinuity which makes it possible for different people to construct different conceptualizations from the same word.

However, at the level of an individual sentence it is very hard to identify differences in the way that a word is used by one actor when compared with another. Language is very flexible and the frame within which a word appears will often display variations around its typical pattern of usage. It is only over very large quantities of text that such typical patterns emerge from the disturbances at the sentence and paragraph level, in an approach to text analysis that falls within the field of corpus linguistics. Corpus linguistics, as I use it, provides the researcher with tools for seeing spatial patterns of wording in a very large quantity of text. Respected scholars within this field see possibilities for making useful observations about the shared meanings of a group from studying its use of words. Here is a view offered by Michael Stubbs on the possibilities for looking upwards from the level of the lexicogrammar towards the discourse semantics of the group:

> "Vocabulary and grammar provide us with the potential and resources to say different things. But often this potential is used in regular ways, in large numbers of texts, whose patterns therefore embody particular social values and views of the world. Such discourse patterns tell us which *meanings* are repeatedly expressed in a discourse community" [35].

Note that Stubbs uses the term *discourse patterns* as meaning patterns in text and not patterns in meaning. He suggests that if one can first, identify a discourse community and, second, obtain a large enough sample of its texts for analysis, then it might be possible to make statements about meanings, which circulate in the community, from the formal analysis of the ways in which words are arranged on the pages of its texts. If we study sustainability communication texts, produced by a particular social actor, then these word meanings will enable us to build up a picture of how the actor understands sustainability issues.

The machine-generated findings presented in this article show that the two social actors have very different patterns of usage of particular words. However, for the time being the corpus linguistic technology is limited to revealing differences at the level of individual words. It is here that framing

theory is useful. First, in arguing that language usage is embedded in experience, it provides an account of why a word will be understood by the user group in the way that it is. Lakoff has cited Charles Fillmore as "the major source for empirical linguistic research" within framing [24], and it is the ongoing FrameNet project, with which Fillmore is closely associated, that is delivering accounts of how language is used within a framing context [36]. In semantic theories founded on the notion of cognitive frames "a word's meaning can be understood only with reference to a structured background of experience, beliefs, or practices, constituting a kind of conceptual prerequisite for understanding the meaning" [37]. Framing theory, then, proposes that words congregate in frames and frames in systems and that these are reflected in internal wiring in the brain. It makes the meaning-creation process more explicit so the audit trail for elucidating meaning is more easily followed by other researchers.

A second advantage of framing theory is that it provides an insight into how very different meanings can be constructed from similar sets of words. Lakoff argues for the particularity of frames and systems most strongly in his section on politics [23], in which he sketches out some of the frames which, he argues, are natural assumptions about the world for someone with a conservative political ideology. By way of contrast, he then presents what he describes as the moral system of progressives. This example supports part of his theoretical case, which is that, although two different groups may make use of a broadly similar vocabulary, the frames and systems that are dominant in the minds of the first group can be very different from those which dominate in the second.

Research questions

Framing theory generated the research questions for this article. If one group of social actors places a particular word in frame A together with a collection of other words, whereas another group places it in frame B with a different set of words, we might expect their respective usage of that word to be different. In effect, differences in the conceptual frame within which a word occurs might have a correlate in a different lexical pattern around the word when it appears in their texts. The two questions were formulated as follows, reflecting the two-layer view of language in Figure 1:

(1) In the text databases of two different groups of social actors is it possible to demonstrate, using an automated and mechanistic procedure, that a word is used in different ways by the members of those two groups?

(2) If the mechanistically generated, database-level word patterning does indicate differences in the usage of a word, is this confirmed by the elucidation of the intended meaning gained from studying the word in its context of use in texts written by the two social actors?

With reference to Figure 1, the answer to question one is to be found firmly in the layer of the lexicogrammar. The intention behind question one was to develop a software-based procedure that was capable of indicating potential differences in the usage of a word. The advantage of having a standard software procedure is that findings from this first stage will be replicable and independent of any subjective bias. With reference to Figure 1, the findings which attempt a response to question two, being interpretive, are in the layer of semantics. Question two asks if the technique developed in stage one is a reliable indicator of differences in usage and meaning. Further, it required that I develop a procedure for elucidating the intended meaning of a word by the social actor, which I present in the methodology section.

Framing theory proposes that words congregate in conceptual frames and that differences in "experience, beliefs or practices" [37] will cause the frames of different social actors to be stocked with a different mix of words. In my elucidation of the meaning of individual words, therefore, I have postulated the existence of five cognitive frames and used the findings on word usage as grounds for speculating on how these frames are configured by the two social actors.

The findings presented in this article make a contribution towards understanding how two significant social actors understand one important aspect of sustainability. These findings help to assess the prospects for social learning referred to in the call for papers. I have studied texts written by British corporations which claim to be committed to a sustainable future; so-called *green business* [38]. I have also created a corpus of texts which were written by environmental campaigning organizations. The common topic of the two collections of texts concerned the sustainability of business operations within the natural environment. In the case of the green business texts, they were writing about their own activities and how they impacted on the environment. In the case of the environmental NGOs the texts were representations of the effects of business activity on the natural environment. The second contribution of this article is to describe a methodology I developed for this identification of meanings which could be applied in a wider mapping of sustainability communication than I have managed. This is presented in the following section.

2. Methodology/Experimental Section

The first stage is represented schematically in Figure 2. I constructed two databases of text-corpora—each running to several million words, by copying material down from the websites of (i) environmental NGOs and (ii) British green business and saving it as .txt files. In designing corpora which are to be compared, there are two mutually-exclusive design objectives which must be reconciled as best one can. On the one hand, it is important that each corpus of text is representative of the organizations which have provided the material. On the other hand, one wants to be able to compare the texts of the different corpora, with a view to saying something interesting about them. If the social actors who have produced the text have very different representations of experience, then one runs the risk of merely demonstrating that different people talk about different things. It was therefore necessary to define in advance of the downloading process what sorts of texts would qualify for inclusion in the databases, making sure that both groups of social actors would have something to say. In Appendix A, Section A.3 of the supplementary file I have provided a more detailed discussion of this selection process. The final definition is as follows:

> Accounts of the damaging consequences of either business activity or the ruling economic framework on the condition of the biosphere or the economic and social conditions of people, and of (a) the activity that green business is taking/not taking, or (b) ought to be taking/not taking, or (c) the necessary changes to the economic framework, in order to reduce the damaging effects of business activities or the economic framework and improve the condition of the biosphere or people.

The lists of organizations whose texts comprised these two databases are shown below in Tables 1 and 2. There is a also a brief explanation of the criteria used to make the selection in Appendix A, Sections A.1 and A.2, of the supplementary file.

Figure 2. Identification and comparison of statistical keywords in the language databases of two social actors.

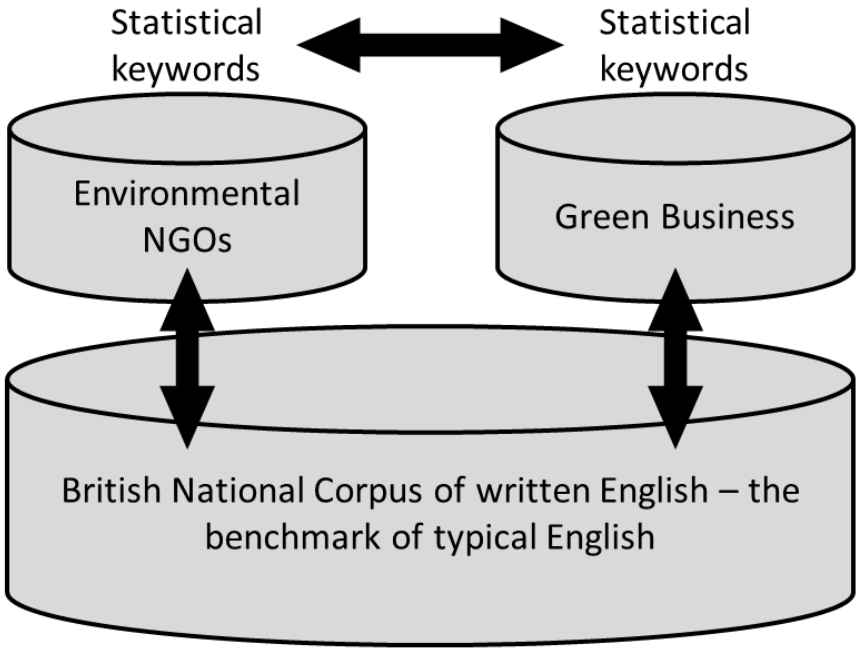


Table 1. Thirty-seven environmental NGOs whose texts formed the material for the language database.

Tag Nr.	Name of organization
(01)	ActionAid International
(02)	Airportwatch
(03)	Amnesty International
(04)	Animal Aid UK
(05)	Baku–Ceyhan Campaign
(06)	Bretton Woods Project
(07)	CAFOD
(08)	Campaign to Protect Rural England
(09)	Chemical Reaction
(10)	Christian Aid
(11)	Corporate Responsibility Coalition
(12)	Corporate Watch
(13)	Down to Earth
(14)	Environmental Investigation Agency
(15)	Ethical Consumer
(16)	Friends of the Earth UK
(17)	Global Witness
(18)	GreenPeace UK
(19)	McSpotlight
(20)	Medact
(21)	Mines and Communities
(22)	New Economics Foundation

Table 1. *Cont.*

Tag Nr.	Name of organization and its website
(23)	Oxfam
(24)	People and Planet
(25)	Save the Children UK
(26)	Tearfund
(27)	The Corner House
(28)	The National Trust
(29)	The Royal Society for the Prevention of Cruelty to Animals
(30)	The Royal Society for the Protection of Birds
(31)	The Soil Association
(32)	The Trade Justice Movement
(33)	The Woodland Trust
(34)	War on Want
(35)	Waste Watch
(36)	World Development Movement
(37)	World Wildlife Foundation UK

Table 2. Twenty-five British green businesses whose texts formed the material for the language database.

Tag Nr.	Name of organization and its website
(01)	Anglian Water (AWG)
(02)	Anglo American
(03)	Arup
(04)	BBC
(05)	BG Group
(06)	BP
(07)	British American Tobacco
(08)	British Industrial Plastics
(09)	Castle Cement
(10)	Corus
(11)	Deloitte Touche
(12)	ERM Group
(13)	E-ON UK
(14)	GlaxoSmith-Kline
(15)	HSBC holdings plc
(16)	Land securities
(17)	Rio Tinto
(18)	rth group
(19)	ScottishPower
(20)	Scottish and Newcastle
(21)	Severn Trent
(22)	Shell
(23)	Unilever
(24)	Veolia Water
(25)	Vodafone

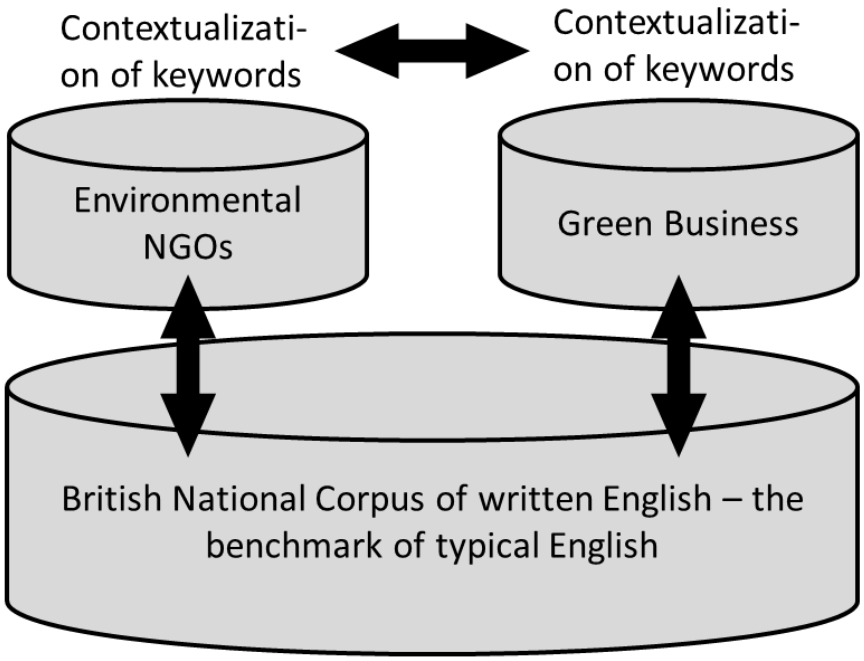
In addition, I was able to make use of the British National Corpus (BNC) [39]—the same database that is used in the FrameNet project, as a reference of typical English. It is pertinent to emphasize that the project's overall design concept was to make comparisons between the two groups of social actors: the environmental NGOs and green business, indicated by the horizontal, double-headed arrow in Figure 2. In this project the key requirement of a control corpus was that it should not favor the discourse of either of the two language databases, by being too similar or too dissimilar. The BNC was identified as having several advantages as the benchmark. First, it was produced by a group of highly-respected project partners, including the British Library Research and Development Department, Oxford University Computing Services, Lancaster University, Oxford University Press, and Longman Group Ltd. Second, since one of its design goals was the wish to construct a corpus which is typical of British English, it provided a very good match for British NGOs and British green business; national differences in the usage of the English language could be eliminated as a possible variable. A third advantage with the BNC, was its ready availability. Finally, the 90 million words in its written corpus were the best guarantee available that it would not favor either language corpus.

The PC program I used is called Wordsmith [40], which is marketed by Oxford University Press. Mike Scott, the author of the software, has published work that describes the linguistic phenomena which Wordsmith is capable of identifying [41]. There are also many previous studies that have used a similar keyword approach to that presented in this article [42–47]. In its first processing of the two sample databases it made a list of words that appeared in each of the two sample databases that I had constructed, ranking them in order of frequency. It then compared each sample list in turn with the corresponding reference list for the BNC and produced a list of statistical keywords, ranking highest those words that appeared much more frequently in the sample word lists than when they were used in the BNC. This process is illustrated by the two, vertical, double-headed arrows in Figure 2. Wordsmith is capable of performing this operation for any length of word string. In theory, therefore, one could search for statistically key phrases containing many words. In practice, however, the number of meaningless phrases that Wordsmith identifies rises exponentially with the number of words in the phrase and this creates an enormous manual job of tidying up the listings to retain just the meaningful phrases. In practice, I was able to identify key two-word units of meaning e.g., "sustainable development" and three-word units of meaning e.g., "health and safety." I have included the top 40 keywords for the two groups in Appendix A, Tables A1 and A2 of the supplementary file. Listings extending to the top 200 one-word keywords, the top 100 two-word keywords, and the top 50 three-word keywords may be found in previously published work [38].

Having identified words which were used with a high frequency by my two groups of social actors, I developed a statistical technique for looking at the lexical context within which a particular word was used in the language database. The corpus linguistic term for this is *collocation* and the overall procedure—shown in Figure 3 looks very similar to that used for keywords. The software goes in turn to every single occurrence of the chosen word that is in the database. It records which words appear within a horizon of five words to left and right of the focus word, and then moves on to the next occurrence of the focus word. In this way it builds up a profile of the words—known as collocates which tend to appear in the close vicinity of the focus word when it is used by this particular social actor. Although it is very fast, the computer can't think for itself. Wordsmith shows, for example, that

in my language databases the word *greenhouse* often appears in the company of *gas* or *effect*. But it has no idea why these two words appear near *greenhouse* and why the word *tomatoes* does not.

Figure 3. Contextualization and comparison of individual keywords.

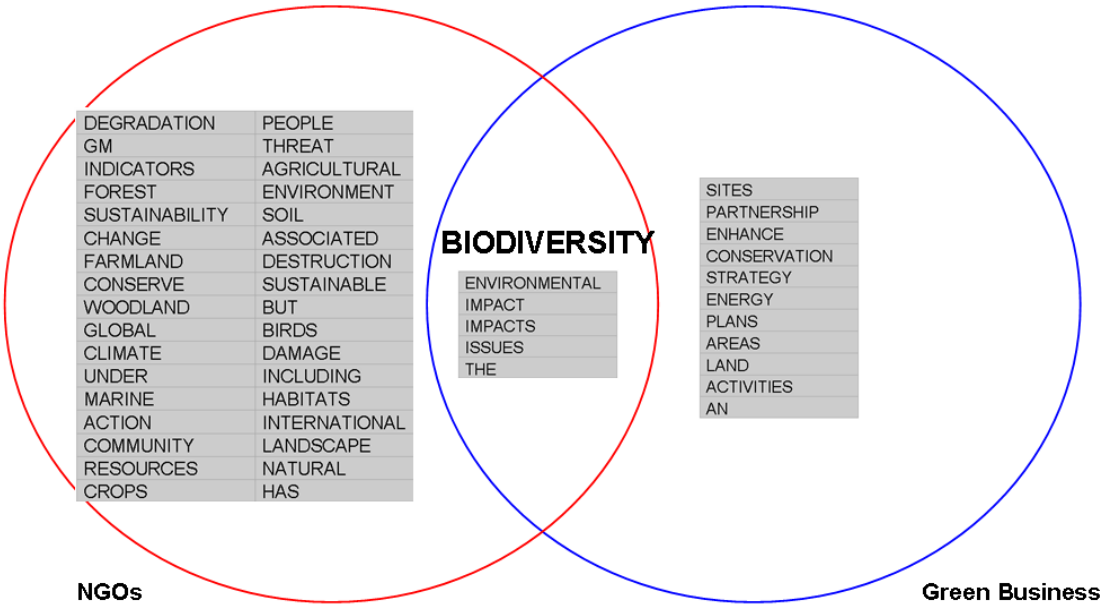


The collocates are ranked by the software according to the statistical significance with which they appear in the vicinity of the focus word. Wordsmith then compares the list of collocates for the focus word when used by the social actor against the report for the same word in the BNC reference. This new report shows the statistically significant collocates of the focus word when used by the social actor when compared with the usage in the British English benchmark of the BNC. By comparing this report for the environmental NGOs with the same report for green business, one gains a comparative indication of the extent to which the two actors use a particular word (i) differently from standard users of British English and (ii) differently from each other.

An example of the results that this mechanistic style of analysis can produce is shown in the Venn diagram in Figure 4, in which the significant collocates of biodiversity are presented. The diagram—and many others with a similar shape—is a response to research question one. In order to reinforce the argument that a single word may be understood differently by different social actors, I shall adopt the convention of presenting words that are the focus of this analysis in italics, as in the next sentence. Figure 4 shows that when the environmental NGOs use the term *biodiversity* it is surrounded, for the most part, by a different set of accompanying words than when green business uses the word. First, we can see that the NGOs have substantially more collocates clustered around *biodiversity*—the left-hand rectangle—than does green business—the right-hand rectangle. This suggests that they frame the word in more unusual ways compared to typical, BNC English than does green business. Second, a comparison of the central grey-shaded rectangle with the other two outer blocks provides an indication of the extent to which the two actors frame *biodiversity* similarly to or differently from each other. In this example the central rectangle of shared collocates is much smaller, containing just five collocates compared with 34 unique ones for the environmental NGOs and eleven

for green business. It indicates that the two actors frame *biodiversity* in markedly different ways and, following Lakoff that the cognitive frames within which *biodiversity* can be found, may be configured differently in the minds of the members of these two social-actor groups, i.e., their understanding of the term *biodiversity* is different.

Figure 4. A comparison of the significant collocates in the two social actors' frame for *biodiversity*.



Wordsmith's mechanistic analysis is able to make one further contribution to the process of elucidating the intended meaning. It uses the results which it generates for producing Figure 4 as the basis for selecting lines of text showing the respective usage of *biodiversity* that is made by the two groups of social actors. In Figure 5 there are twenty lines of text which have the word *biodiversity* roughly in the middle. There are several hundred occurrences of *biodiversity* in the green business database but Wordsmith has refined its selection procedure by looking in the close vicinity of *biodiversity* for the occurrence of one of the collocates shown in the right-hand rectangle of Figure 4. Wordsmith selects the twenty examples, therefore, to accentuate the way in which green business's frame for the word *biodiversity* distinguishes itself from both typical—BNC—written English and also the NGOs' usage. A similar procedure can be carried out for the NGOs' usage of *biodiversity* and the two twenty-line reports now compared, in an attempt to make generalizations about usage. In this way, I have been able to answer research question two and in the findings section I present examples of the elucidation of the meaning from this single-word comparison process.

The Venn diagram in Figure 4 may be conceived of as a visual illustration of Lakoff's explanation of frames [23]. What my technique is unfortunately unable to show is a top-down view on the language database that might reveal the clustering of specific words into frames. At present, the technology is only capable of going in bottom-up, on one word at a time, to show how other words cluster around the selected word. Despite this limitation, it remains possible to make progress with the bottom-up approach because framing theory insists that language is embedded in experience; the configuration of the frames in which we think constitutes and is constituted by our practice.

Figure 5. Twenty examples of the usage of *biodiversity* by green business.

N	Concordance
1	and pruning of fruit trees. Bulmers participated in the development of the Herefordshire County BAP (**Biodiversity** Action Plan). • • • • Our nursery, started in the 1920s, has always grown a wide
2	UNI Universities WT Wildlife Trust Middlemarch Environmental Ltd. Page 15 Biffa Waste Services **Biodiversity** Action Plan RT-MME-1175C BIBLIOGRAPHY & USEFUL REFERENCES
3	the work programme has influenced the Biodiversity Action Plan outcome. The Biffa Waste Services **Biodiversity** Action Plan will be revised and updated in the light of review results and any
4	Highlights Summary of contents GRI index/ indicators Page no. Our strategy for the management of **biodiversity** issues is to minimise impact, positively enhance habitats, ensure that planned
5	Assessment Methodology", "Community Health Indicators in Minerals Project Development", and "**Biodiversity** Indicators and Minerals Development". Additionally the Group's businesses
6	24, 27, 31 Australian Minerals Industry Code of Environmental Management 10 Baseline surveys 22 **Biodiversity** 8, 10, 14, 34 Climate change 12 Closure 37 Codes of conduct 28 Community
7	Environmental Policy commitment • undertake a biodiversity audit of the company's land holdings • implement the **biodiversity** strategy through a biodiversity action plan, using appropriate land
8	WTWs. Biodiversity and land use The water industry can have both positive and negative impacts on **biodiversity** through its discharges to rivers, abstractions and its management of reservoirs. Both
9	NGOs and the local community, in such issues as: scientific surveys to map and record biodiversity; local **biodiversity** management implementation projects; development of acceptable indicators to
10	Rio Tinto is currently engaged in are: * Climate change * Human rights * Global Reporting Initiative * **Biodiversity** * Product stewardship One of the vehicles Rio Tinto uses to address these issues
11	policy. Energy policy. Environment policy. Environment policy. Environment policy and objectives. **Biodiversity** action plans for developments. Biodiversity management plan for occupied
12	o Energy efficiency o Environmental incidents o Environmental research o Renewable energy o Land use and **biodiversity** o Resource use o Waste management * Activities in 2003 * By-product
13	gas abatement, air quality issues and associated health effects, ash site management, development of site **biodiversity** action plans and oil risk assessment for fluid-filled cables owned by EME
14	* Identifying actual and potential land-based liabilities * A strategy for maintaining and encouraging **biodiversity**. We want all our sites bigger than 50 hectares to have a biodiversity action plan
15	o Environmental incidents o Environmental research o Renewable energy o Land use and **biodiversity** o Resource use o Waste management o Working with suppliers Add page Print
16	o Environmental incidents o Environmental research o Renewable energy o Land use and **biodiversity** o Resource use o Waste management o Working with suppliers Add page Print rep
17	Environmental Conservation Association). BP supports many specific projects to protect and promote **biodiversity**, including a National Marine Environment Centre at Cat Ba Island in Vietnam, con
18	agriculture impacts on the environment and on developing plans to improve wood fuel self-sufficiency, while minimizing **biodiversity** impacts. It has helped to reduce environmental impacts, to
19	change is also thought to present a major threat. BG Group's operations generally have limited direct impact on **biodiversity**. In particular cases, indirect impacts are potentially more significant however.
20	three other important aspects where we intend to define our contribution more clearly, namely climate change, **biodiversity** and community engagement. We have developed a climate change policy for

In order to apply this idea to the project it was first necessary to select an aspect of social experience which both groups practiced. Second, within this field of practice, I had to identify a vocabulary of words that both groups used sufficiently often for patterns in their usage to have some statistical reliability. The area of common experience on which I settled, was a shared concern for the natural environment. For the NGOs this is their raison d'être; everything they do, write, and say has, as its ultimate goal, the protection of some part of the environment. The corporations in the green business group had defined themselves as committed to sustainable development. Every green business website that I examined included, as some sort of overarching statement, a recognition that the natural environment was struggling as a result of mankind's activity and that business had a role to play. For them, a concern for the natural environment was a part of the process of exploring how development could proceed sustainably. Following Lakoff, I attach the label *system* to this idea for no other reason than that a concern for the natural environment is a complex idea rather than a simple one and he uses a two-tier cognitive taxonomy of frames within systems. The first task was to find the lexical realization of the system of concern for the natural environment in the texts of the two groups. Assuming this could be found in both language databases, the second task was to identify textual phenomena that suggested that the framing of this system of concern might be different.

In the first task, I worked through the top 500 words in the NGOs' keyword list and identified 34 words with a semantic relation to the idea of concern. These are presented in Appendix A—Table A3—in the supplementary file. In crosschecking for these 34 words among the keywords of green business, I found only eighteen, which occur often enough to qualify them for comparing how they are used. Green business avoids the more emotive terms such as *violations*, *disaster*, *threat*, and *toxicity* that are found in the NGOs' list of 34. This finding is a good illustration of the early distinction which I made between the well-known understanding of framing theory used by media/political scientists and the one used in this article by semantic specialists such as Lakoff and Fillmore. The deliberate usage of such words by the environmental NGOs can be conceived of as an attempt to frame reality in a way that is more likely to inflame public opinion against the corporate perpetrators and generate political pressure. Conversely, the deliberate avoidance of these terms by green business may be an attempt to frame reality in order to tone down the public discourse.

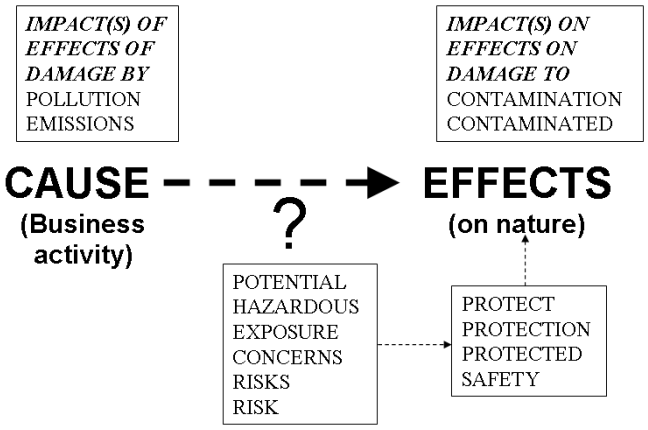
Just eighteen words—presented in Table 3—suggests that green business's cognitive system of concern is realized by a more limited vocabulary than that which is used by the NGOs. However, this finding is not necessarily an indication that green business frames the concern it has for the natural environment differently from the NGOs. All of the eighteen words used by green business may share very similar conceptual frames as the ones that can be found among the environmental NGOs. By careful elucidation of a word's usage and meaning one can postulate the lexical characteristics of such frames.

Table 3. Lexical representations, used by both the NGOs and green business, of a system of concern.

Key word	Key word	Key word
IMPACTS	HAZARDOUS	RISKS
EMISSIONS	PROTECT	EXPOSURE
IMPACT	PROTECTION	RISK
POLLUTION	SAFETY	CONTAMINATED
CONCERNS	POTENTIAL	DAMAGE
CONTAMINATION	EFFECTS	PROTECTED

In order to provide some more structure to the reading process, in which I would have to compare 36 twenty-line reports, I made an interpretive move to organize the words within a framework of experience; in effect, proposing how the system of concern plays out in communicative practice. The eighteen words that contribute to the realization of both groups' respective system of concern can be organized around a cause-effect locus, illustrated in the schematic in Figure 6, which I will now explain.

Figure 6. Some of the vocabulary of the system of concern and the cause-effect locus.



On the right of the figure are representations of the effects of the injuries which the natural environment is suffering. On the left is business activity which is the cause of these detrimental effects. I have drawn the arrow as a dotted line with a question mark underneath, in order to illustrate the uncertainty in the cause-effect locus which, to the frustration of the NGOs, always underlies the communication process. Associated with this uncertainty and placed under the question mark, is a third group of words, which are concerned with the subjective evaluation of the cause-effect relationship. Very closely related to this evaluation of risk is a fourth group, which concerns questions of protection and safety for those elements of the natural environment which are at risk. There is a degree of

arbitrariness about this organization, but the four sub-groups provided a systematic means of working through the eighteen words. Note that three of the terms—shown in bold italics—can be used semantically for both cause and effect according to the preposition which follows them.

The method used to map the usage of these words was very similar to that used by the FrameNet researchers, except that whereas they assume a common experience and look for its textual realization, my interest was in possible differences. With the schematic of Figure 6 in mind, typical avenues of investigation were to look for agents which/who are responsible for the causes, any evaluations of the cause-effect relationship, the recipients which/who suffer the effects, and possible knock-on consequences of these effects on the first recipient to a second one. The same procedure was performed on one pair of reports, and notes made of the differences in usage. Having completed this process for each word in a sub-group, I reviewed the summaries to see if there were any consistent patterns in their representation of practice. This was the interpretive process that led to the proposal of the five different frames that follow in the findings section and how they contribute to the realization of the cognitive system of concern of each actor.

3. Findings

Findings in the format of Figure 4 are provided in Appendix B of the supplementary file. Here I have presented Venn diagrams for five of the eighteen words in the system of concern. These findings are generated by Wordsmith in a purely mechanistic procedure and are the response to research question one. The general impression one gets from glancing through the diagrams is that the particular word that is in focus is framed by its users in different ways to the other social actor and also differently to the typical usage in the BNC. There are a few exceptions, the most notable being the diagram for the word *emissions*. This has just a few statistically significant collocates which suggests that the NGOs and, particularly, green business use the word in a very similar way to the usage in the BNC. However, the overriding impression one gets from looking at the eighteen Venn diagrams is that words are framed differently by the two social actors; differently from each other and differently from typical English.

The second research question I posed asked if the mechanistically generated word patterning of the Venn diagrams was a reliable predictor that differences in meaning would be identified in studying the usage of the word in texts. The findings in response to this question are both positive and negative. Report pairings for twelve different words are also presented in Appendix B of the supplementary file and in the following sections I use these textual representations to make interpretations which demonstrate that these words are, indeed, used very differently by the two actors—as predicted by Wordsmith. However, usage reports for six of the eighteen words—*pollution*, *emissions*, *potential*, *hazardous*, *exposure*, and *protected*—have not been included because I was unable to discern any significant difference in the usage of the word. One can argue that the Venn diagram for *emissions* predicts that there will be very little difference in usage. However, the diagrams for the other five words predict either some, or very considerable difference in usage, and this was not found. This finding suggests that the mechanistic analysis requires further refinement to make it a more reliable predictor of differences in usage and meaning.

The twenty-line reports containing examples of usage for the remaining twelve words, have provided a strong indication that the two actors' usage, and probably therefore, their meaning, is strikingly different. These individual word interpretations are contextualized within my postulation of how they are framed by the two actors within their respective cognitive systems of concern for the natural environment. I propose that the system consists of five frames. However, I suggest that there are significant differences in the way that some of these frames are lexically stocked. In sum, therefore, green business's cognitive system of concern is substantially different to that of the environmental NGOs.

3.1. A Frame of Concern for the Natural Environment

From studying the usage of the words *protect*, *protection* and *concerns*, there is complete consensus between green business and the environmental NGOs on the need to take care of the natural environment. In the next section I shall discuss the usage of *concerns* in more detail, so limit myself to the first two words here. In the concordance report for the NGOs' usage of *protect* in Table B1 (see Appendix B of supplementary file), the object of the verb, in eighteen of the twenty lines, is some aspect of the natural environment. The message is the same in the concordance report for green business in Table B2. There, all twenty lines of *protect* have a clear object of the process of protecting, and the object is some aspect of the natural environment.

However, the green business frame of concern for the natural environment is short on detail compared with the NGOs' frame. Seven of the objects to be protected in Table B2 are either employees or customers of the green businesses, in three lines the object is "the environment" and other lines refer to the protection of "human life" and "rare species." By contrast, the NGO report in Table B1 shows that the word *protect* is framed along with words such as "the crop," "the rural environment," "biodiversity," "children," "small farmers," "whales," "dolphins," "sexual health," "the forest," "indigenous land" and "the North Sea and the marine life it supports." Although both actors share this frame of concern for the natural environment, green business situates itself in corporate headquarters. From here it can see its employees and customers clearly but its view of the natural environment is not so detailed. The report pair for *protection* (Tables B3 and B4) shows a similar tendency.

3.2. A Frame of Good Intentions

From reading the pair of reports for the usage of *concerns* (Tables B5 and B6), it appears that this frame is very active in the green business system of concern but is missing from the environmental NGOs' system. Whereas the latter merely have their concerns, green business attaches importance to dealing seriously with them. In its report in Table B6, I have highlighted in yellow fourteen lines in which green business represents some aspect of a process for addressing the concerns which are in focus. It represents processes of listening to, understanding and then responding to the concerns of different stakeholders, and also the procedures it has put in place for managing these stakeholder dialogues. For green business, the frame of concern for the natural environment is closely wired to the frame of good intentions; it wishes to address the concerns in a responsible way. Reflection over practice confirms that this frame may not be so important for the NGOs. Their task is to raise awareness, while green business has accepted the role of rectifying any problems that it may be causing.

3.3. A Frame of Perception of the Damage

In the presentation of the frame of concern for the natural environment, I suggested that the view from green corporate headquarters was not as detailed as that enjoyed by the environmental NGOs and I now return to this theme with more findings. The first pair of reports to which I shall make reference is that for *damage* itself. For the NGOs (see Table B7), nineteen of the twenty usages of damage have a clear natural environment reference to the recipient which is suffering the damage, among them "DNA," "livelihoods," "people's health," "the planet," and "the community." Green business uses the word *damage* (Table B8) with a wider spread of objects, including assets in its own production sites: "Thunder Horse Platform in Gulf," "power lines," and "property." There are also abstract objects of damage, such as to "reputation," which occurs three times. Even more interestingly, of the twelve lines in which the object of damage is an aspect of the natural environment, only two—marked with an "X"—refer to specific incidents in which damage was caused. The other ten usages are representations of corporate objectives such as "Our strategy is to minimize damage to biodiversity" (line five), or a discussion of general issues such as "Sulphur dioxide is a major constituent of 'acid rain', associated with damage to the environment" (line fourteen).

The divergence in their respective frame of perception of the damage becomes even more pronounced when the usage of *contamination* is examined. In the NGO report (Table B9) seventeen of the twenty lines include the object of the contamination and in almost all cases it is very specific; "chicken feed," "United States food," "local soil," "allotment in Walkergate 3B," "her blood," and "non-GM rape." In the green business report (Table B10) on the other hand, only thirteen of the examples have objects that might be a part of the natural environment. In these thirteen lines there are only three terms that are actually used: "groundwater," "land," and "(surface) water," and in all but two of the cases—marked with an "X"—the usage is part of a description of a corporate procedure, objective or a possible event which has not happened. In only two of twenty lines, does green business represent the specific contamination of a specific element of the natural environment. Comparisons of the report pairings for *contaminated*, *effects*, *impact*, and *impacts* (Tables B1–B18) tell a broadly similar story but there is no space to include them here.

In summary, the green business frame of perception of damage to the natural environment lacks detail. The recipients of damage and contamination are objects such as the environment, society, communities, land, air, water, habitats, species and eco-systems. The impression that green business views the natural environment from a considerable distance is reinforced. In contrast, the NGOs' frame of perception of damage has the detail that comes from immersing themselves in the natural environment.

3.4. A Frame of Responsibility

In order to explore the frame of responsibility, I returned to the reports for the use of *damage* and annotated them further by highlighting in red those agents I could find, which are responsible for the damage to the natural environment. The report for the environmental NGOs (Table B19), shows that they have a very clear view of what is causing the damage. There are fourteen lines which contain an agent within the limited space of the concordance line, and they are stated explicitly: "GM crops," "export subsidies," "weapons," "agriculture and development," "Shell," and "current EPA

negotiations." Looking at the green business report (Table B20), in only six of the twelve lines in which there is a reference to damage to the natural environment, is there also an agent responsible for causing the damage. But in all of the six lines the representation is one of a generalized risk of damage to the natural environment, or a historical account of damage done previously. In no line is there a specific reference to damage done now combined with the agent responsible for it.

I also reviewed the report pair for *effects* and annotated the lines with red highlighting for the agents of effects (Tables B21 and B22). Here, the first impression is that green business sees as much as the NGOs; it mentions thirteen agents compared with the NGOs' eleven. But, again, a closer examination (Table B22) disappoints; seemingly all of the representations of the green corporations are either generalized scenarios, models of what could happen (but hasn't), historical reviews of the bad old days or procedures implemented for preventing the negative effects from happening. The contrast between green business' generalized framing of responsibility and the NGOs' detailed focus on the causes of these effects is, again, striking. Among the latter's eleven agents of effects, the NGOs are on the trail of "polluting chemicals," "pesticides," "the Chernobyl accident," and "brominated flame retardants" (Table B21). I have provided the report pair for *impacts* further annotated with the agents responsible for the impacts (Tables B23 and B24) which illustrates a similar tendency as that for *damage*.

3.5. A Frame of Risk Management

With reference to the cause-effects arrow in Figure 6, I have so far focused attention on each end separately; either on how the natural environment and what is going on in it are perceived or on opinions of what is causing the problem. However, in this section I introduce the frame of risk management in which the relationship between cause and effect is represented. My interpretation of how this frame is configured is based on text showing the usage of the three words *risk*, *risks* and *safety* (Tables B25–B30), two of which are presented here.

A comparison between the environmental NGOs and green business of their twenty concordance lines for *risk* reveals some, by now, expected observations (Tables B25 and B26). First, the NGOs have nineteen out of nineteen effects, highlighted in grey shading, and they are detailed: "feather pecking," "testicular and breast cancer," "the lives of 1500 local fishermen," and "rising flood risk." By contrast, the green business effects are few—six of eighteen—and they are general; "environmental risk," "health risk" and "a migration of talent." Second, in nineteen of nineteen lines the NGOs identify a clear agent, highlighted with red shading, which is the source of the risk; "such chemicals," "radon," "farm-scale trials," and "the transfer of GM genes," whereas the lines in the green business report are almost without agents. The agent is mostly unclear, the consequences are similarly uncertain, and the connection between them is unproven. But the texts of green business contain representations of a comprehensive corporate apparatus for ensuring that, whatever the risk may be, it is under control. In its report for *risk* (Table B26), seventeen of eighteen concordance lines include some representation of a management process, highlighted in yellow. The examples include "assessments and audits," "analysis," "assessing risk and designing controls," and "minimize the risk." In the report for the NGOs (Table B25), there are just nine of a possible nineteen references to managing the risk. Moreover, the reduction of risk at which the NGOs aim will, in two cases, be achieved by "tighter controls" (line one) or "refusing loans" (line sixteen), *i.e.*, by removing the source

of the risk. I have included the two reports for *risks* (Tables B27 and B28) in which the observations are broadly similar.

The green business focus on the space between cause and effect receives its clearest manifestation in its usage of the word *safety* (Tables B29 and B30). For reasons of visual impact, I include, in Figure 7, the report for green business's usage of *safety* (Table B30). Readers will have no difficulty in seeing the yellow shading which indicates the representations of the process of managing which will secure even greater safety.

Figure 7. Report for usage of *safety* in the green business corpus.

N	Concordance	
1	global policies on Accident Investigation and on the Management of Health and Safety Risks of Radio Frequency Fields for employees and the general public. In	
2	industry agreements. Unilever's worldwide standards of occupational health and safety are applied to our 62,000 employees and seasonal workers. The standards	
3	Shell companies have been committed to continuous improvement in their health, safety and environmental (HSE) performance for many years, and have policies, pr	
4	s. Biffa operational managers attend specialist in-house courses, hold regular safety meetings with workers and are issued with performance criteria against	
5	owed by those in the North West. We started off by carrying out a ' Health and Safety Climate Survey' to assess attitudes and provide us with a benchmark agai	
6	for the health and safety culture we wish to create and maintain. Health and safety management within S&N is built on a set of Group Standards which detail a	
7	nce. We place considerable emphasis on employee involvement in the health and safety decision-making process , as this is the best way of ensuring that system	
8	tyStandards that set out what we expect to achieve in each area of health and safety. These standards are used to provide regular assurance to the Board , th	
9	e Audit Committee so that they can review measures of environment, health and safety performance and track our progress toward meeting EHS targets . They als	
10	curately assess the safety and effectiveness of new medicines and monitor their safety after approval. Safety and efficacy information is provided to doctors th	
11	e issues * Workplace issues o Employee consultation o Employee health and safety o Equality and diversity o Rewarding employees o Training and devel	Not Counted
12	s been working with environmental management systems since 1997 and health and safety systems since 2001. Its distribution division achieved certification to	
13	North Slope and in Anchorage. These team discussions focus on how to heighten safety awareness and improve performance to prevent such tragic incidents in t	
14	ur industry and society because of the potentially serious impacts on health, safety and the environment. Oil released into the environment can contaminate	
15	." he explains. "And BP is very keen to promote issues like the environment and safety, so this is great way to combine the two." The information on this page	
16	s to the local contractor including purpose built training centre. Health and Safety Performance Improvement Karachaganak, Kazakhstan – Industry top quartile	
17	ough selection, retention, education, training and awareness in all aspects of safety , health and the environment. 3. Risk assessment: Identify, assess and pr	
18	e foundations for greater discipline in the way that we go about achieving our safety , health, environment and community goals, setting a framework for conti	
19	and training courses, the use of computer touch screens for access to critical safety and health information and enhanced risk management practices at the emp	
20	gement support for safety programmes • structured training regimes • regular safety audits • screening and training of contractors • clearly understood sa	

The equivalent report for the NGOs (Table B29) reveals the characteristics which we would expect; many more representations of the sources of the threat to safety, and an approach which is precautionary and skeptical to being able to manage the risk.

In summary, I have postulated the existence of a cognitive system of concern for the natural environment which includes five different frames. The textual findings suggest that the system is configured differently by the two groups. Green business's cognitive system of concern has two well-developed frames; (ii) good intentions and (v) risk management. But three frames—(i) concern for the natural environment, (iii) perception of the damage and (iv) responsibility—are light on detail. In these three frames abstract generalizations of the natural environment dominate in the lexical realization. Within the NGOs' system of concern, the picture is almost the opposite. The frames of (i) concern for the natural environment, (iii) perception of the damage and (iv) responsibility, contain words, which make detailed representations. Based on its absence from the texts, (ii) the frame of good intentions may not be present in the NGOs' cognitive system of concern, for the sound reason that it is not an important part of NGO practice. Frame (v) risk management is certainly present but less well developed than the corresponding green business frame of risk management. It appears to be very closely wired to the frames of (iii) perception of damage and (iv) responsibility and it has an aspect of risk removal which augments the green business focus on risk management.

4. Conclusions

This study has demonstrated a significant difference in conceptualization between how environmental NGOs and green business comprehend their concern for the natural environment. As previously stated in the introduction, a limitation is that it is broadly synchronic—the texts on which these findings are based date from a period between 2001 and 2005—as opposed to diachronic. What is needed is to construct text databases from different periods and look for changes in meanings over time. This is possible. Many social actors have well-organized electronic archives of their sustainability communication. It should be feasible to create one database with texts from around 2000 and compare it with another from, say, the period 2010 to 2013. With respect to green business, however, some readers may take the view that the results from such a mapping would be entirely predictable; no change. One's confidence on the prospects for real movement towards business sustainability may be dependent on the sort of mental model of a corporation that one holds. It is possible, for example, to conceive of the business corporation as an amalgamation of individuals. This is the assumption made by van Huijstee and Glasbergen in an article in which they envisage stakeholder dialogue between a business and an NGO. In the following excerpt, they describe exactly the sort of social learning process that an optimist would wish for:

> "Once the corporate participants come to understand the NGO's viewpoints, their mental models might be challenged. Sustainability considerations might become more important in their personal value system and consequently in their decision making. If so, the dialogue participants would have experienced a fundamental learning process of the kind Argyris and Schön [48], Senge [2] and Cramer [49] discuss in their work on organisational learning. The experience might induce corporations to move from the strategic management model towards the sustainability model" [50].

Van Huijstee and Glasbergen envisage individual people working for the business corporation: "the corporate participants," and suggest, quite plausibly, that "sustainability considerations might become more important in their personal value system." However, they make an implicit assumption that such sustainability considerations in an individual corporate executive's value system might lead to a change in her/his decision making. Clearly, if the individual senior executives of the business have been invested with unlimited powers to direct the corporation's course, then they can turn it towards a more sustainable future.

The counter argument, however, is that Van Huijstee and Glasbergen are invoking Habermas's concept of communicative action in a situation which Habermas would not accept, because one of the participants—business—is "oriented toward success rather than reaching understanding" [51]. The business corporation is not the tool of the senior officers with which they can do as they see fit once they have reached a new understanding. Some sympathetic senior officers may wish to include moral considerations in their decision making, but their freedom of action is limited by the dictate of the bottom line and the narrow financial interests of shareholders. If one's mental model of the modern business corporation is of a financial spreadsheet, then it is hard to be optimistic about the prospects for significant social learning; spreadsheets do not engage in meaningful dialogue. Here, again is an opportunity for further research work to deepen our understanding of sustainability communication. Different nations have different traditions and regulatory systems for corporate governance and these

factors will be important in promoting or hindering progress towards a genuinely sustainable model of business practice.

Social learning must play an important role in moving society towards more sustainable forms of consumption and production. I have argued for the importance of mapping the meanings of social actors as they engage in sustainability communication. Through an iterative process of exchanging meanings one hopes that understandings change and social learning progresses. By mapping meanings one can systematically identify differences and then explore the prospects for movement.

The methodology presented in this article can be used as a tool in this process. By comparing the written sustainability communication of different social actors, it provides a good audit trail through to the elucidation of their intended meanings. It ought to be possible to develop guidelines for the creation of text databases that will make comparisons between actors even more reliable so that the mapping of sustainability understandings becomes a more systematic process. The procedure is also language independent in the sense that the mapping work can be carried out using the native language of the social actors being studied. Comparisons of the identified meanings could then be undertaken by competent bi-lingual experts to explore possible international differences. The author would welcome approaches from other scholars who are interested in using this approach.

Supplementary Materials

Supplementary materials can be accessed at: http://www.mdpi.com/2071-1050/5/6/2457/sl

Conflict of Interest

The author declares no conflict of interest.

References

1. Clifton, D. Sustainable Business: Are We Heading in the Right Direction? *Sustainability* **2012**, *4*, 586–603.
2. Senge, P. *The Fifth Discipline: the Art and Practice of the Learning Organisation*; Doubleday: New York, NY, USA, 1990.
3. Schaefer, A.; Harvey, B. Agents of change in corporate "greening": Case studies in water and electricity utilities. In *The Business of Greening*, 1st ed.; Fineman, S., Ed.; Routledge: London, UK, 2000; pp. 169–188.
4. Senge, P.M.; Carstedt, G. Innovating our way to the next industrial revolution. *MIT SMR* **2001**, *42*, 24–38.
5. Freeman, R.E. *Strategic Management: A Stakeholder Approach*; Pitman: Boston, MA, USA, 1984.
6. Donaldson, T.; Preston, L.E. The stakeholder theory of the corporation: concepts, evidence and implications. *Acad. Manage. Rev.* **1995**, *20*, 65–91.
7. O'Riordan, L.; Fairbrass, J. Corporate Social Responsibility (CSR): Models and Theories in Stakeholder Dialogue. *J. Bus. Ethics* **2008**, *83*, 745–758.
8. Burchell, J.; Cook, J. Assessing the impact of stakeholder dialogue: changing relationships between NGOs and companies. *JPA* **2006**, *6*, 210–227.

9. Burchell, J.; Cook, J. Stakeholder dialogue and organizational learning: changing relationships between companies and NGOs. *BEER* **2008**, *17*, 35–46.
10. Agudo-Valiente, J.M.; Garcés-Ayerbe, C.; Salvador-Figueras, M. Corporate Social Performance and Stakeholder Dialogue Management. *Corporate Social Responsibility and Environmental Management* **2013**, doi: 10.1002/csr.1324.
11. Reed, M.S.; Evely, A.C.; Cundill, G.; Fazey, I.; Glass, J.; Laing, A.; Newig, J.; Parrish, B.; Prell, C.; Raymond, C.; *et al.* What is Social Learning? *Ecol. Soc.* **2010**, *15*, r1.
12. Allen, M.W.; Walker, K.L.; Brady, R. Sustainability Discourse Within a Supply Chain Relationship: Mapping Convergence and Divergence. *J. Bus. Commun.* **2012**, *3*, 210–236.
13. Corman, S.; Dooley, K. CRAWDAD Text Analysis System. Available online: http://www.crawdadtech.com/ (accessed on 29 March 2013).
14. Fløttum, K.; Dahl, T. Different contexts, different "stories"? A linguistic comparison of two development reports on climate change. *Lang. Commun.* **2012**, *32*, 14–23.
15. Mason, M.; Mason, R.D. Communicating a Green Corporate Perspective: Ideological Persuasion in the Corporate Environmental Report. *J. Bus. Tech. Commun.* **2012**, *26*, 479–506.
16. Koteyko, N. Managing carbon emissions: A discursive presentation of "market-driven sustainability" in the British media. *Lang. Commun.***2012**, *32*, 24–35.
17. Carvalho, A.; Burgess, J. Cultural Circuits of Climate Change in U.K. Available online: http://sciencepolicy.colorado.edu/students/envs_4800/Carvalho_2005.pdf (accessed on 29 March 2013).
18. Byrch, C.; Kearins, K.; Milne, M.; Morgan, R. Sustainable "what"? A cognitive approach to understanding sustainable development. *QRAM* **2007**, *4*, 26–52.
19. Lourdel, N.; Gondran, N.; Laforest, V.; Debray, B.; Brodhag, C. Sustainable development cognitive map: a new method of evaluating student understanding. *IJSHE* **2007**, *8*, 170–182.
20. Springett, D. Business Conceptions of Sustainable Development: A Perspective from Critical Theory. *BSE* **2003**, *12*, 71–86.
21. Reckien, D.; Wildenberg, M.; Bachhofer, M. Subjective realities of climate change: How mental maps of impacts deliver socially sensible adaptation options. *Sustain. Sci.* **2013**, *8*, 159–172.
22. Kontogianni, A.D.; Papageorgiou, E.I.; Tourkolias, C. How do you perceive environmental change? Fuzzy Cognitive Mapping informing stakeholder analysis for environmental policy making and non-market valuation. *Appl. Soft Comput.* **2012**, *12*, 3725–3725.
23. Lakoff, G. Why it Matters How We Frame the Environment. *Environ. Comm. J. Nat. Cult.* **2010**, *1*, 70–81.
24. Lakoff, G.; Johnson, M. *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*, 1st ed.; Basic Books: New York, NY, USA, 1999.
25. Skerratt, S. Hot Spots and Not Spots: Addressing Infrastructure and Service Provision through Combined Approaches in Rural Scotland. *Sustainability* **2010**, *2*, 1719–1741.
26. Birch, K.; Levidow, L.; Papaioannou, T. *Sustainable Capital?* The Neoliberalization of Nature and Knowledge in the European "Knowledge-based Bio-economy". *Sustainability* **2010**, *2*, 2898–2918.
27. Baake, K.; Kaempf, C. No Longer "Bullying the Rhine:" Giving Narrative a Place in Flood Management. *Environ. Comm. J. Nat. Cult.* **2011**, *4*, 428–446.
28. Späth, P. Understanding the Social Dynamics of Energy Regions—The Importance of Discourse Analysis. *Sustainability* **2012**, *4*, 1256–1273.

29. Lassen, I.; Horsbøl, A.; Bonnen, K.; Pederesen, A.G. Climate Change Discourses and Citizen Participation: A Case Study of the Discursive Construction of Citizenship in Two Public Events. *Environ. Comm. J. Nat. Cult.* **2011**, *4*, 411–427.
30. Turner, R. Discourses of Consumption in US-American Culture. *Sustainability* **2010**, *2*, 2279–2301.
31. Holden, M. The Rhetoric of Sustainability: Perversity, Futility, Jeopardy? *Sustainability* **2010**, *2*, 645–659.
32. Sovacool, B.K. Spheres of Argument Concerning Oil Exploration in the Arctic National Wildlife Refuge: A Crisis of Environmental Rhetoric? *Environ. Comm. J. Nat. Cult.* **2008**, *3*, 340–361.
33. Smerecnik, K.R.; Renegar, V.R. Capitalistic Agency: The Rhetoric of BP's Helios Power Campaign. *Environ. Comm. J. Nat. Cult.* **2010**, *2*, 152–171.
34. Halliday, M.A.K. *An Introduction to Functional Grammar*, 2nd ed.; Edward Arnold: London, UK, 1994.
35. Stubbs, M. *Text and Corpus Analysis: Computer-assisted Studies of Language and Culture*; Blackwell: Oxford, UK, 1996.
36. FrameNet. Available online: https://framenet.icsi.berkeley.edu/fndrupal/ (accessed on 29 March 2013).
37. Fillmore, C.; Atkins, B. Toward a Frame-Based Lexicon: The Semantics of RISK and its Neighbors. In *Frames, Fields and Contrasts: New Essays in Semantic and Lexical Organization*; Lehrer, A., Kittay, E.F., Eds.; L. Erlbaum Associates: Hillsdale, NJ, USA, 1992.
38. Brown, M. *Managing Nature-Business as Usual: Patterns of Wording and Patterns of Meaning in Corporate Environmental Discourse*; Acta Humaniora: Oslo, Norway, 2008.
39. British National Corpus: About the BNC. Available online: http://www.natcorp.ox.ac.uk/ (accessed on 29 March 2013).
40. Wordsmith Tools. Available online: http://elt.oup.com/catalogue/items/global/multimedia_digital/wordsmith_tools/9780194505161?cc=no&selLanguage=en&mode=hub/ (accessed on 29 March 2013). The author of Wordsmith Tools is Mike Scott. He maintains a website which provides more information on his product at http://www.lexically.net/wordsmith/index.html/.
41. Scott, M.; Tribble, C. *Textual Patterns: Key Words and Corpus Analysis in Language and Education*, 1st ed.; John Benjamins Publishing Company: Amsterdam, The Netherlands, 2006.
42. Rayson, P. From key words to semantic domains. *IJCL* **2008**, *13*, 519–549.
43. Kemppanen, H. Keywords and Ideology in Translated History Texts: A Corpus-based Analysis. *Across Lang. Cult.* **2004**, *1*, 89–106.
44. Toolan, M. Values are Descriptions; or, from Literature to Linguistics and back again by way of Keywords. *BELL* **2004**, *1*, 11–30.
45. Archer, D., Ed. *What's In A Word-List? Investigating Word Frequency and Keyword Extraction*, 1st ed.; Ashgate Publishing: Farnham, UK, 2009.
46. Hoey, M. *Lexical Priming: A New Theory Of Words And Language*, 1st ed.; Routledge: London, UK, 2005.
47. Duguid, A. Newspaper discourse informalisation: A diachronic comparison from keywords. *Corpora* **2010**, *2*, 109–138.
48. Argyris, C.; Schön, D.A. *Organisational. Learning: A Theory of Action Perspective*; Addison-Wesley: Reading, MA, USA, 1978.
49. Cramer, J. Company learning about corporate social responsibility. *BSE* **2005**, *14*, 255–266.

50. Van Huijstee, M.; Glasbergen, P. The Practice of Stakeholder Dialogue between Multinationals and NGOs. *CSR* **2008**, *15*, 298–310.
51. Habermas, J. *Moral Consciousness and Communicative Action*; The MIT Press: Cambridge, MA, USA, 1990.