THE USE OF METAPHORICAL COMPOUNDS ON THE WEB: CORPUS CONSTRUCTION AND PRELIMINARY ANALYSIS

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Abstract

The paper discusses how ad hoc corpora compiled with the help of Altavista search engine can be employed to study the coinage and use of novel compounds headed by the noun ‘carbon’ on the internet. We compiled a corpus from Altavista abstracts and URLs to explore the role of some of these 'carbon compounds' as framing devices in different online discourses dealing with issues of climate change mitigation. By combining a quantitative diachronic analysis of their occurrences with a qualitative analysis of the contexts in which the compounds were used, we identify three clusters of compounds focused on finance, lifestyle, and attitudes and outline their different communicative functions. This approach may open up new ways for a web based diachronic study of novel word combinations and analysis of the social and cultural implications of their use.

Keywords: diachronic analysis, Internet corpora, metaphor, compound, frame analysis, climate change discourse.

I. INTRODUCTION

The World Wide Web has become an unprecedented source of authentic natural language data for researchers in linguistics, discourse analysis, artificial intelligence, and many other fields. The potential value of the web as a source of linguistic data is well documented, as linguists have been using the Internet to mine linguistic information since the mid-1990s (e.g. Kilgariff, 2001). The Web is particularly useful when searching for lexical items and syntactic structures that are too rare to appear in any standard corpora. The commercial search engines like Google and Altavista facilitate the search process as they provide the fast and easy access to a number of web based sources. However, these services are often declared unsuitable for many linguistic purposes because of their limited search functionality and the lack of linguistic annotation. Some examples of the disadvantages of web engines are: the search engine results do not present enough instances (1000 or 5000 maximum); they do not present enough context for each instance; they do not allow searches to be specified according to linguistic criteria such as the citation form for a word, or word class (Lüdeling et al. 2007).

However, despite these and other problems with search engines there are cases when the vast textual resources on the Internet can be successfully harvested to create (untagged) corpora for applied linguistics research. For example, Thelwall (2005: 518) points out that ‘some research questions can be addressed with the help of relatively simple statistics’ such as word counts (see Ljung, 1991), or with the study of context available through concordances (c.f. Sinclair et al., 1998). Following Meyer et al.’s (2003), who suggest that the web search engines can be used to find ‘suggestive answers’ to many research questions, even if, in some cases, they are not entirely accurate, this paper calls for renewed attempts to use the web as a source of linguistic and socio-cultural data in the study of neologisms. In the
study described below we demonstrate how a corpus compiled from Altavista abstracts, used in combination with Googlenews archive timeline tool, can serve as a useful source of information about the use of novel compounds.

The focus of our study are lexical combinations of at least two roots with 'carbon' as the lexical hub, such as 'carbon finance' or 'carbon footprint', that have recently become ubiquitous in discourses on climate change in English speaking science, politics, and the mass media. They are part of a whole new language evolving around the issue of climate change that can reveal how climate change is framed as a public issue by various stakeholders, and what solutions to climate change and global warming are being proposed, contested and debated. We first identify the most ‘active’ and ‘creative’ compounds around ‘carbon’ as the hub and then follow their development over time. The aim is to examine the role of these ‘carbon compounds’ as framing devices in different online discourses dealing with the issue of climate change mitigation. In order to achieve this aim we will use tools derived from cybermetrics and combine them with corpus linguistics and discourse analytic techniques in order to complement the diachronic analysis of the expanding network around the compounds with qualitative analysis of the contexts of their use. This will allow us to chart the emergence and use of ‘carbon compounds’ as a new framing tool used in climate change communication. The results can serve as a springboard for a detailed critical discourse study of how and why these new creations gained popularity with various groups.

I. 1. Diachronic analysis of the web-based data

Corpus linguistics has recently seen a new research impetus that concerns itself with variation and change over a short time span, covering relatively recent developments (Renouf, 2002). Examples of corpora compiled to support research into current (mostly syntactic) change are the Freiburg-Lancaster-Oslo-Bergen corpus and the Diachronic Corpus of Present-Day Spoken English. However, as there are language changes that are too recent to be registered in standard corpora, the researchers have turned to the Web in their search of suitable information. The WebCorp project (http://www.webcorp.org.uk/) is one example of an online tool set up to treat the Web as a corpus (Kehoe and Renouf, 2002). There are also examples when the search engines were used directly, such as the study by Bergh et al. (1998) who used the AltaVista search engine to look for fronted-which constructions (see also Rosenbach, 2007).

Whilst the ‘recent change’ approach has been increasingly pursued in the corpus-based studies of syntax and morphology, short-term changes on the lexical plane have not received much attention from researchers who use the web-based resources to look into the complex relationship between language and society (see Mautner (2005) for a comprehensive overview). To remedy this gap and promote further application of Web based corpora in ‘corpus assisted discourse studies’ (Partington et al, 2003), this paper outlines how the online texts and the date query facilities offered by standard Web search engines can be employed to study the use of novel compounds.

It has been pointed out that standard Web search engines are limited when it comes to date restricted queries (Thelwall, 2005; Kehoe, 2006). The three common loopholes that could allow a page to be incorrectly reported as matching a date are: 1) it could be created a long time ago and recently slightly modified - appearing as a newer page; 2) it could be an old page that did not contain a creation date on the web server and was found recently by a search engine, with search engine assuming that it was created on the day that it was found; 3) the creation date information could be wrong on the server. However, only the third of
these could result in pages that seemed to be older than they were - the other two would make older pages seem newer. So for the purpose of finding the earliest occurrence of a phrase online, only the third is a problem and this seems rare (M. Thelwall, personal communication).

I. 2. Conceptual framework

The paper is aimed as a contribution to the growing trend of incorporating corpus based methodologies in frame analysis (Koteyko et al., 2008a) and discourse analysis (Baker et al., 2008) which includes critical metaphor analysis (Charteris-Black, 2004; Mussolf, 2006). In parallel with the growing interest in CDA studies (e.g. see Wodak and Weiss, 2003 for an overview), an analytical tool known as frame analysis has been widely used to study newspaper discourse, especially in the fields of policy analysis and science and technology studies, where frames are explored as shared cultural tools for the creation and interpretation of meaning in context (Van Gorp, 2007). Our concept of frame builds on authors such as Schön and Rein (1994) and Entman (1993) who pay particular attention to the structuring role of ‘framing devices’ such as images, keywords, storylines and especially metaphors. From this perspective of frame analysis, metaphors can shape both how we think about and understand the world on an epistemological level and how we see and act in the world on an ontological level (see e.g. Lakoff, 2004).

In this paper, we study metaphorical or ‘creative\(^1\) compounds’ (Benczes, 2006), that is, types of nominal construction that combine lexical compounding with metaphorical conceptualization. According to this definition, ‘carbon emission’ would be a compound but not a metaphorical one, whereas ‘carbon diet’ is a compound and a metaphor. In the metaphorical compounds with ‘carbon’ as head, some aspects of the by now conventional compound ‘carbon dioxide’ are used to concretize and make sense of new realities emerging from what one may call ‘management’ of CO\(_2\), be it selling/buying (e.g. ‘carbon trading’) in the form of ‘emissions’ or reducing/increasing/calculating it (e.g. ‘carbon footprint calculator’). These metaphorical compounds connect the two domains and are therefore different from just any descriptor\(^2\). We therefore use tools derived from critical metaphor analysis and frame analysis to identify and analyze these compounds in our corpus.

As the most productive word formation process in English, compounding represents more hidden and more collective processes of framing that has been overlooked in social scientific research on public controversies focused on the invention and spread of (often one word) metaphors in media, policy and practitioner discourses (Hellsten, 2003; Nerlich, 2005; Koteyko et al., 2008b); for climate change see, for example, Weingart et al., 2000).

Following the discourse-based studies\(^3\) of metaphors (Zinken et al., 2008), we believe that an examination of metaphoric ‘carbon compounds’ may offer a way to trace and talk

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\(^1\) Linguists have debated the nature of creativity and productivity in compounds for a long time, a topic we shall leave aside in this article (but see Munat, 2007).

\(^2\) It should be stressed that in most carbon compounds ‘dioxide’ is elided and has to be inferred and that in most carbon compounds ‘carbon’ stands for something other than carbon. Take for example the compound ‘carbon rationing’. In a first step one could paraphrase this compound as ‘carbon dioxide rationing’. However, on closer inspection, it emerges that what one is rationing is the ‘emission’ of ‘carbon dioxide’ and more concretely one is rationing the consumption of energy derived from the consumption of oil or other energy sources.

\(^3\) This body of work has focused upon discourse metaphors – metaphors that are conceptually grounded but whose meaning is also shaped by their use at a given time and in the context of a debate about a certain topic.
about the differences between diverse approaches to climate change mitigation proposed in the multiple and fragmented discourses that can be found on the Web. As compounds arise from the combination or blending of different lexical and ontological domains, compounding represents an important contextualization device, allowing lexical elements to be grouped into clusters that share important dimensions of meaning. For example, a discourse analysis of the use of metaphoric compounds by an issue network (for more detail on the concept of issue networks, see Rogers, 2002) can reveal the things valued and assumed by that group of actors (see also Alexander, 2008).

II. METHOD

II. 1. Identification of compounds

In this paper we used the RSS scanning method to generate a large collection of recent online text from which currently used carbon compounds could be extracted. Based on XML code that continuously scans the content of a website for updates, RSS feeds are a useful tool for collecting information from a large variety of websites. There is a particular advantage of using RSS feeds for collecting data from a large number of blogs as ‘the simple and compact RSS format reduces Web traffic and the load on the servers hosting the blogs’ (Thelwall and Stuart, 2007).

We generated a collection of 82,049 RSS feeds from search engines and RSS databases and monitored each feed daily using the purpose-built RSS collection and processing software Mozdeh. Our sample is therefore a convenience sample, which is unavoidable when collecting a large sample of feeds, because there is no single systematic register from which to select randomly. The sample essentially consists of daily updates from a wide range of blogs, news sites and other sources throughout 2007 and so is a reasonable basic source of information about what was discussed online and in the news in 2007. Whilst the sample cannot claim to be representative of the web due to its ad-hoc nature, it would be strange for a carbon compound to be extensively discussed and still be absent from all the blogs and news sites included. Hence the collection is reasonable for its purpose of identifying carbon compounds recently discussed.

Next, a list of compounds was produced from the 2007 RSS corpus with the help of the clustering function of AntConc software (Anthony, 2005). The list was then studied independently by two project members to identify ‘creative’ metaphorical compounds. Following the standard procedure for the identification of metaphors (Pragglejaz group, 2007) 34 compounds were selected for further analysis (see Table 1) through the study of their concordances and sometimes through wider context accessible though URLs.

While conceptual metaphors are considered universal, independent of time, discourse metaphors change with the ongoing discourses and are used for specific purposes (Hellsten, 2003, Kotevko et al, 2008b).
Table 1: List of creative carbon compounds

<table>
<thead>
<tr>
<th>Carbon Compound</th>
<th></th>
<th>Carbon Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 carbon accounting</td>
<td>13 carbon deal</td>
<td>24 carbon indulgence</td>
</tr>
<tr>
<td>2 carbon addiction</td>
<td>14 carbon debit</td>
<td>25 carbon lifestyle</td>
</tr>
<tr>
<td>3 carbon allowance</td>
<td>15 carbon delusion</td>
<td>26 carbon living</td>
</tr>
<tr>
<td>4 carbon bigfoot</td>
<td>16 carbon detox</td>
<td>27 carbon management</td>
</tr>
<tr>
<td>5 carbon budget</td>
<td>17 carbon dictatorship</td>
<td>28 carbon market</td>
</tr>
<tr>
<td>6 carbon burden</td>
<td>18 carbon diet</td>
<td>29 carbon morality</td>
</tr>
<tr>
<td>7 carbon challenge</td>
<td>19 carbon footprint</td>
<td>30 carbon payment</td>
</tr>
<tr>
<td>8 carbon conscious</td>
<td>20 carbon future</td>
<td>31 carbon saving</td>
</tr>
<tr>
<td>9 carbon crazy</td>
<td>21 carbon friendly</td>
<td>32 carbon sinner</td>
</tr>
<tr>
<td>10 carbon credit</td>
<td>22 carbon guilt</td>
<td>33 carbon spewing</td>
</tr>
<tr>
<td>11 carbon critics</td>
<td>23 carbon hero</td>
<td>34 carbon tax</td>
</tr>
</tbody>
</table>

II.2. Corpus construction

Although the WebCorp system has been adapted to support diachronic analysis (Kehoe, 2006) the low recall of WebCorp made it unsuitable for the purposes of our study. When the selected compounds (Table 1) were input as search terms in WebCorp, it turned out that the frequencies, and, more importantly, the start dates for the use of each compound differed significantly from those generated by the AltaVista and Googlenews searches. For example, according to the WebCorp results, many of the compounds started to occur only from 2002 onwards whereas Altavista provided much earlier dates. In this way, the important information about the date when these novel creations were started to be used in the online world tended to be omitted.

Consequently, we decided to compile our own database of contexts where the selected compounds were used since the beginning of the Web. The basic set of data was collected using the search function of the AltaVista Advanced Search Engine between 1990 and November 2008 (the end date coincides with the beginning of our study). To extract the AltaVista results (URLs, titles and abstracts) the program was written in the dot net programming environment to submit queries via Internet Explorer. The input consisted of our selection of 34 compounds and the set of years. Each compound was queried for each of the years, selecting the whole year as the scope of the search (i.e. Jan 1 to Dec 31). If there was more than one page of results then subsequent pages of results were automatically accessed. The results were saved into a separate text file, one per year. The ‘page scraping’ part of the program is a set of rules for identifying all the results in each AltaVista page and writing them to the text file in summary form, without the HTML codes. Next, the abstracts were separated and arranged into 17 files for each year to be explored with concordancing software.

AltaVista was selected because its advanced search engines allows for searches limited to a certain time period. This search matches the last modified date of web pages, which is sometimes the creation date of a web page and sometimes the date that it was last changed (Leydesdorff & Curran, 2000). The dates returned therefore have to be treated with caution. As the AltaVista dates are occasionally wrong (e.g., because of incorrect file dates on the originating web servers) we have cross-checked the dates when each compound started to be used by searching in the Googlenews archive. Although both sources may produce some inaccurate data, their combination provides more reliable information. The ‘timeline’ facility of the Googlenews archive was also used to monitor more recent use of compounds as the Altavista search results are limited to 1050 per year.
III. RESULTS

III. 1. Chronological trends

The longitudinal study of compounds in our Alta vista corpus and via Googlenews ‘timeline’ has revealed two tendencies in the use of the compounds across time. First, the number of uses of all compounds has risen rapidly from 2000 onwards, and peaked around the end of 2007 – beginning of 2008 (according to the Googlenews archive, the monthly figures were decreasing towards the end of 2008 for some of the compounds, in line with a general decrease in reporting on climate change issues overall, see Ward, 2008). Second, it became possible to trace which compounds were the oldest and which started to be used only recently. Here a tendency to cluster according to the time period and semantic set was observed. Thus, as can be seen from Table 2, compounds headed by the lexis from the sphere of finance appeared to be the ‘oldest’ compounds as they started to be used between the early 1990-s and 1999 (exceptions are carbon payment, carbon debit, carbon deal which started to be used in 2000 and 2001, in semantic terms – carbon spewing is also an exception); the majority of middle range (1999 to 2005) compounds can be grouped under the label of ‘lifestyle’ (although there are exceptions in semantic terms such as carbon crazy, carbon future, carbon monster); whereas compounds that started to be used only from 2005 onwards

Table 2: frequencies of compounds per year
are headed by emotional and evaluative lexis\(^4\) (with the exception of the ‘lifestyle’ compound *carbon detox*). Consequently, if we follow the assumption that frames or phases manifest themselves through differences in word usage (Thelwall & Hellsten, 2006), the life-cycle of carbon mitigation as a topic can be divided into three phases: 1) the period between 1990 and 1999 focused on issues of market and finance, before the lifestyle compounds started to appear 2) the 1999-2005 period characterised by the use of lifestyle compounds and 3) the 2005-2008 period characterised by the appearance and use of attitudinal compounds.

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\(^4\) The division into ‘lifestyle’ and ‘attitudinal’ lexis is made here for analytical purpose and is admittedly crude as some of the lifestyle compounds can be used evaluatively in certain contexts.
III. 2. Qualitative study of concordances

In this section we will study each of the above clusters and present only the overall trends resulting from this necessarily limited qualitative enquiry. A more detailed study that takes into account the origin of the websites and the distribution of compounds across the websites is in preparation.

To examine the discursive/rhetorical function of the compounds, concordances were generated from the abstracts for each period with the help of AntConc, a textual analysis computing tool (Anthony, 2005). The contexts of use available through concordances display the varying ways in which organizations put the noun carbon and carbon compounds to use, and as such are expected to provide more information on the nature of the different framings of the carbon mitigation issue and their change over time. Extended contexts of use (such as examples provided below) were obtained by following the respective URLs.

III.3.1. The Use of Finance Compounds Online between 1990 and 1999

The contexts in which compounds are used before 1999 do not show much diversity. The URLs predominantly come from governmental organization reports and news reports.

Although first coined around 1988 (see Oxford English Dictionary, online), carbon tax is first used online in August 1992 in the Chairman of the US Republican National Committee vision letter: ‘We oppose any attempt to impose a carbon tax as proposed by liberal Democrats’. As we can see on Figure 1, other finance compounds soon started to appear in online use in similar US political documents and reports:

The regions which have implemented a carbon tax evaluate a further tax raise; the regions which have implemented an energy and carbon efficiency programme evaluate additional energy and carbon savings (1994, The Climate Fund, http://www.ciesin.org/kiosk/publications/94-0017.txt)

From 2003 onwards the frequency of compounds increased to more than 1050 times per year (1050 is the Altavista result limit). Given that the economics of climate change (costing impacts, mitigation and adaptation initiatives) is a central issue in policy-making at the international level and national levels of various countries (e.g. DFID, 2006; IPCC, 2007) this high frequency is hardly surprising.

The metaphorical fusion of economy and the production/reduction of CO$_2$ through the process of compounding (the combination of finance lexis with the noun ‘carbon’) helps transform environmental objects into commercial ‘goods and services’. From this perspective, as Lohmann (in press) observes, trade is turned into both comparative valuation and environmentalist action:


The finance/accounting frame makes environmental crises more visible to decision-makers and in a sense more ‘natural’ to them, by classifying them in a way that makes explicit quantifiable relationships with commodities and other economic objects (Lohmann, in press).

**III.3.2. The Use of Lifestyle Compounds Online between 1999 and 2005**

In the more recent group, carbon footprint is the most frequent and widely used compound. It also seems to be the most popular compound among the general public - a November 2008 search using the Google search engine’s ‘trends’ tool ([www.google.com/trends](http://www.google.com/trends)) shows searches for the term ‘carbon footprint’ exceed those for other frequent terms such as ‘carbon tax’ and ‘carbon offset’ by more than a four-to-one ratio worldwide$^5$. The use of this compound, which was coined around 1999 according to OED ([www.oed.com](http://www.oed.com)), spawned a new ‘carbon-speak’ centred on calculating individual and collective impacts.

Some of the many posts on [www.greendaily.com](http://www.greendaily.com) show how this compound was embedded in everyday lifestyle issues from wine drinking to using your mobile phone:

2 ways to calculate your carbon footprint

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$^5$ See [http://www.google.com/trends?q=carbon%2C+carbon%2C+offset&ctab=0&geo=all&date=all&sort=0](http://www.google.com/trends?q=carbon%2C+carbon%2C+offset&ctab=0&geo=all&date=all&sort=0)
How to reduce your wine's carbon footprint
Use your iPhone to measure your carbon footprint and fuel usage

The use of ‘carbon footprint’ with other compounds such as carbon diet, carbon lifestyle, carbon living, etc. (see Figure 2) constitutes and reflects a profound narrative or frame centred on the re-organisation of life(style) around climate change. Through the process of compounding, the noun ‘carbon’ is combined with the lexis from the semantic set of ‘lifestyle’ to evoke the frame according to which global warming is seen as a new structure for personal life. Components of this frame include the widely shared cultural narrative of dieting and calorie counting based on a sub-cluster of such compounds as carbon calories, carbon counting, carbon calculator, carbon detox, etc.

Learn about the controversy surrounding the greenhouse effect, and calculate your family’s carbon diet in an online game. (2000, http://www.idahoptv.org/learn/thismanth/oct00.html)

We know that we will not be burning oil, gas and coal forever. And we know the environmental benefits of kicking our carbon addiction. (2001, http://www.jockgill.com/presentations/cheney_lobbies_for_a_discredited.htm)

Additionally, such compounds as carbon diet and carbon addiction work to create a moral frame as they highlight restraint (in terms of carbon consumption) as a primary green ethic guiding (heroic) life-style choices. The study of other related compounds also shows an emergence of a new frame (or subframe of the ‘lifestyle’ frame) – what one may call moral or religious frame, according to which excesses are sins. The frame is perhaps best visible through the compound carbon guilt which is used to describe the production of carbon dioxide as something we should regret and/or justify:


This religious frame may shift the emphasis from the account of climate as the production of a particular gas and the necessity to limit this production through lifestyle changes, to a moral story about the need for personal limitation. However, lifestyle compounds also seem to frame green living in ways which make it seem almost frivolous rather than frugal. As we will see, the third wave of carbon compounds reflects debates about these issues more actively.

The metaphorical compounds coined and used between 1999 and 2005 are therefore employed to create the following story about climate change: 1) unrestrained human energy-use has dangerous unintended consequences on the natural world; 2) we need to take responsibility for this, change our behaviour, and limit our excessive energy-use and consumption of resources. But this can be done as a matter of life-style choices and as part of modern life; it does not have to entail any deeper behaviour changes that might disturb modern lifestyles.

III.3.3. The Use of Attitudinal Compounds from 2005 onwards

The cluster of highly evaluative compounds in use since 2005 points to exchanges of opinions on the controversial nature of climate change mitigation options. Judging from the
majority of negatively coloured compounds, this period may indicate some kind of climate change fatigue (Ward, 2008). Other studies have noted that during that time the use of ‘carbon credits’ and ‘carbon offsetting’ as financial mechanisms to mitigate climate change began to be heatedly debated in the English speaking media (Nerlich and Koteyko, 2009). Below we will explore how carbon compounds have provided discursive means to express these criticisms and this more reflexive attitude to climate change mitigation.

As Figure 3 shows, the frequency of attitudinal compounds has risen sharply at the end of 2006 – beginning of 2007. During this period, such compounds as ‘carbon morality’ and ‘carbon critics’, for example, are used to furnish arguments that climate change mitigation strategies are framed not as scientific observation about cause and effect but rather are presented as a morality tale.

Alright Dr. Ron! Way to go. Yes, the global crime syndicate's operatives, like Al Gore, are selling the people on the guilt of ‘Man-made’ global warming. This way the elite can tax their little peps even more: a carbon tax, a breathing tax, a farting tax--then they sell you on suicide to save the planet. (June 2007, http://m.digg.com/politics/Ron_Paul_Slams_Global_Warming?offset=35)

In the newspapers, opinion columnists talk about the danger of mistaking the ubiquity of the new carbon-speak for substantive change:

What makes me uneasy is simply knowing how quickly humans adopt new phrases and how readily we confuse them with the reality — or the unreality — of our actions. The two things we seem to do most instinctively are manipulate language and create markets, and those two instincts converge when it comes to carbon footprints. Creating a market in moral carbon — offsets that counter our energy-rich lifestyle — feels a little like Rotisserie baseball, more illusion than reality (June 2008, http://www.nytimes.com/2008/06/24/opinion/24tue4.html).

The contexts of use of the attitudinal compounds point to a variety of critical statements targeted at various aspects of sustainable development and carbon mitigation. For example, critics of market environmentalism point out that environmental crises are rooted not in inadequate costing ‘but in the very spread of market mechanisms and norms’ into all spheres of society (O’Neill, 2007: 21). Here compounds such as carbon delusion and carbon dictatorship are used to target and question the basis of market environmentalism:

Kevni and his left believe they can have ‘forever’ control of markets and economic planning thanks to the AGW [Australian government] carbon delusion. They will not let that go. (Reply to ‘Doing nothing really is cheaper’, September 2008, http://blogs.news.com.au)

The compound carbon critics is used to denote groups which identify with different aspects of such criticism – these groups can be ‘environmental offsetting sceptics’ who point out that offsetting schemes do not work because they resemble medieval indulgences that absolve you from sinful behaviour but do not prevent sinful behaviour in the first place, ‘economic offsetting sceptics’ who point out the rather cynical exploitation of carbon offsetting schemes for the purpose of personal enrichment rather than as a means to mitigate climate change, and even ‘Al Gore sceptics’ (Nerlich and Koteyko, 2009).
When Al Gore, or anyone prominent for that matter, does something for the environment, the **carbon critics** cry footprint foul and run up staggering numbers about the actual damage that these so called do-gooders are doing in the name of good (July 2007, [www.mydd.com/story/2007/7/7/13815/55042](http://www.mydd.com/story/2007/7/7/13815/55042)).

Prince [Charles] paints his transatlantic trip green to offset the **carbon critics** (January 2007, [www.timesonline.co.uk](http://www.timesonline.co.uk))

Criticism of voluntary offsetting gained momentum with the publication of Al Gore’s film and book *An Inconvenient Truth* (in 2006) which, despite record sales, has triggered accusations of hypocrisy expressed, inter alia, with the help of the compound ‘carbon crusade’ widely used in blogs:


During this time period, critics of the market environmentalism approach to environmental problems started to describe voluntary offsets as the sale of ‘carbon indulgences’. Another variation of the ubiquitous carbon footprint, ‘carbon Bigfoot’, although sometimes used simply to describe someone with a large carbon footprint (Are you a Carbon Bigfoot? Quiz rates your Personal impact on the environment; [www.freerepublic.com](http://www.freerepublic.com/)), is also used to express criticism, for example in statements where hypocrisy or hype around climate change are discussed, especially with relation to the activities or Al Gore who was accused of squandering energy in his mansion.

**Just more lies brought to you by the Liars Club, including Al Gore, Mr. Carbon Bigfoot**6 (December 2007, [http://digg.com/politics/Ron_Paul_Slams_Global_Warming](http://digg.com/politics/Ron_Paul_Slams_Global_Warming))

Broadly speaking, attitudinal carbon compounds are used as a tool for expressing scepticism regarding various aspects of climate change mitigation initiatives. Their discursive role is therefore different from the role of finance and lifestyle compounds. Due to their strong (negative) connotations they provide an evaluative frame of reference which can supersede other conceptual frames. Whenever these evaluative/critical compounds are used, they convey the writer’s stance on the overall issue which can, at the same time, be conceptualized with the help of other compounds (e.g. finance ones), as the following example of ‘carbon indulgence dealer’ shows:

**BTW, has anyone considered the ‘carbon footprint’ of the San Antonio conference? How does the AIA plan to offset such a Sasquatch-ian impression? Perhaps it could come up with a carbon tax like Boulder, CO has done. Alternatively, perhaps Mr. Gore could recommend a reputable carbon indulgence dealer. I think the AIA should stop drinking the Kool-Aid and pay attention.** (2007; [http://blog.aia.org/aiarchitect/2007/05/a_lightening_rod_for_emissions.html](http://blog.aia.org/aiarchitect/2007/05/a_lightening_rod_for_emissions.html)).

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6 In the popular imagination Bigfoot is of course a monster who wanders in the woods in the American Far West.
IV. CONCLUSIONS

This study used searches in Altavista and Googlenews to gain insights about the use of creative compounds by various sites on the Internet. The compilation of the corpus from Altavista abstracts has allowed us to study how carbon compounds first started to be used in the online media in the early 1990s, gained popularity after 2000, and reached a peak in usage in 2008 (after which at least some of the compounds were used less frequently, a trend that overlaps with a decrease in media coverage around climate change). The qualitative study of concordances and whole texts (via available URLs) has enabled us to explore how throughout the above period carbon compounds were used as an effective tool to communicate different approaches, framings and attitudes to such a complex and urgent problem as climate change.

Metaphoric compounds may be less spectacular than some of the metaphors that have been used to structure public debates in the past (e.g. Nerlich, 2005), but in the case of climate change they have emerged as a framing device that fits well the complexity of the issue itself. In themselves trivial and easily overlooked, *en masse* they structure some aspects of English climate change discourse in intriguing ways. The combination of pages both from news sources and blogs has provided us with a broad spectrum of contemporary discussion, as we were able to study compounds used in a wide variety of types of sources, having varying communication strategies and motivations. Although such a sample presents difficulties for social scientific research (compared to samples with a narrower set that have clear parameters as far as its creators are concerned), this type of corpus provides insights into the role of compounds as framing tools.

According to the theory of metaphor, the essence of metaphor is to reflect and induce conceptual change: metaphors make something difficult comprehensible and give a name to something that cannot be expressed otherwise. Consequently, one of the main uses of the metaphoric compounds, as illustrated especially by finance and lifestyle’ compounds is to open up a new perspective on the issue of climate change mitigation as they allow their users to talk about carbon dioxide emissions in terms of cost and credit or in terms of changes to individual lifestyles. They can naturalise carbon mitigation options for policy makers by mapping them onto financial options and they can naturalise them for ordinary people by mapping them onto everyday lifestyle choices, from paying taxes to choosing the right wine. In other instances, compounds such as ‘carbon guilt’ and ‘carbon detox’ are used to create a religious/moral frame that can shift attention from environmental questions to questions of personal morality. They also tend to question and scrutinise what might otherwise come to be seen as ‘the natural option’ according to the frames afforded by compounds that exploit the conceptual spaces of finance and lifestyle. From this perspective, creative ‘carbon compounds’ serve as traditional framing devices (metaphors and other imagery) in that they allow carving out a certain conceptual space which provides a particular angle on an issue.

This study has presented a methodology for tracing the use of creative compounds on the Web and analysing their role in the framing of the climate change mitigation issue. While the use of web corpora for diachronic analysis in applied linguistics certainly has its limitations, it nevertheless allows applied linguists to engage with a wide range of ‘real world
problems’ (Cook, 2003: 5) as they emerge and not a long time later when they have changed or been superseded by new ones. For reasons of space we could only briefly comment on the discursive role of compounds but hope that our approach will inspire a further, more situated study of their use.

References


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7 The paper also testifies to the widening scope of applied linguistics by moving beyond an earlier concern with only one real-world problem of language teaching and learning.


Nerlich, B. (2005). “‘A River Runs Through it’: How the discourse metaphor crossing the Rubicon was exploited in the debate about embryonic stem cells in Germany and (not) the UK”. Metaphorik.de: http://www.metaphorik.de/08/nerlich.pdf.


