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## Examining conceptual metaphor models through lexical frequency patterns: A case study of U.S. presidential speeches

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### 1. Introduction

One issue of concern in *conceptual metaphor theory* has to do with establishing the basis for a particular cognitive model. For example, it is essential to avoid postulating a cognitive model based on conceptual metaphors and then saying that the conceptual metaphors are evidence for that particular cognitive model. This *circulus in probando* can be avoided if it is first shown that a particular cognitive model exists based on evidence other than conceptual metaphors themselves or if, once conceptual metaphors have been postulated, other linguistic evidence is brought to bear on the issue.

Lakoff's two proposed cognitive models of political/moral systems (1996, 2002) have run into just such a quandary. Lakoff postulated that two specific models of the family organize conceptual metaphors into coherent systems that give rise to unambiguous moral rules. These moral rules relating to the concept of family underlie the values of the two predominant political parties in America, the Republicans and the Democrats, especially since the election of Ronald Reagan in 1980. The *strict father (SF) model* is based on a traditional nuclear family where the father has the primary responsibility to support and protect the family. The primary metaphor for this model is that MORALITY IS (UNDERSTOOD AS) STRENGTH. Lakoff postulates that the Republican Party in America bases its value paradigm on this model, and, thus, the Republicans will primarily use metaphors (such as MORALITY AS STRENGTH) that support this model.

The alternate model, the *nurturant parent (NP) model*, is postulated to be used primarily by the Democrats. The NP model is based on a family where responsibility is shared among family members, and there is mutual caring and support given to all family members. The primary metaphor for this model is MORALITY AS NURTURANCE.

These cognitive models, while seemingly intuitively correct in their assessment of the reasons for the fundamentally different views held by De-

mocrats and Republicans, have not received support in the linguistic literature. Charteris-Black (2004, 2005), for example, extensively analyzed metaphors in U.S. presidential speeches, yet did not present evidence supporting these two models (although he did present evidence for a related metaphor, the *moral accounting metaphor*). Cienki (2005) specifically searched for instances of these metaphors in transcripts of three televised debates between the 2004 presidential candidates, George Bush Jr. (a Republican) and Al Gore (a Democrat), and found only forty-eight instances of conceptual metaphors (in a 41,000-word corpus) that support these two cognitive models.

The scarcity of these instances led Cienki to expand his search to include entailments, which could be either metaphorical expressions or non-metaphorical expressions, such as "I think it's important for NATO to be strong and confident" (Bush Jr., cited in Cienki, 2005: 290). Unfortunately, the steps for determining what constitute a metaphorical or non-metaphorical entailment are often open to interpretation. However, the idea of looking at non-metaphorical entailments to support the models is similar to the hypothesis I am proposing here: Patterns of lexical usage found in well-defined corpora can reflect underlying cognitive models.

This idea of looking at lexical frequency patterns has recently been utilized in analyses of lexical change (Lim 2002, 2008). Lim, for example, showed that over a 200-year period, U.S. presidents used an increasingly democratic rhetoric. He also demonstrated that words having to do with families (i.e., kinship terms) have increased substantially since Franklin Roosevelt's presidency, and the words *children* and *youth* have jumped considerably since Jimmy Carter's term. Lim's studies have demonstrated that socio-cultural shifts can be detected through keyword analyses. In another diachronic corpus-analysis, Ahrens (2006) examined the frequency of use of male-biased words, such as the generic use of *man* and *mankind*, between 1945 and 2005 in State of the Union Addresses. She found that there was a marked drop in these usages after Title IX of the Civil Rights Act was encoded into law (during Gerald Ford's term). Title IX specifically outlawed discrimination on the basis of gender. Although the generic uses of *mankind* are kept alive by Republican presidents, the use of *man* to stand for "people" has now dropped out of the presidential lexicon. Ahrens uses this data to argue that analyses of lexical use in small, but meaningfully designed, corpora can shed light on subtle bias with regard to language use.

In addition to the above studies regarding the examination of lexical frequency patterns diachronically, a useful starting point to study and con-

trast the political ideology of a particular speaker with others has been to determine prominent keywords in a text and then evaluate the reason for their salience (i.e., Hart et al. 2005; Koller and Semino 2009; Semino and Koller 2009). This work has been built on the insight gained from Scott (2001), who hypothesizes that a corpus reflects the accumulated exposure a speaker has to a language, and suggests that if a word occurs more often in a specific text or specific corpus, compared to a general corpus, then this word is a "keyword" for that text and reflects what the text is about.

A similar assumption is made in this study with a slight variation: The assumption is that a corpus of an individual speaker reflects the speaker's viewpoint within the constraints of that particular corpus. A further independent assumption is made that conceptual metaphor models can be independently and objectively associated with a set of keywords for that model. (The methodology of implementation of this assumption is given in section 2.) Finally, a hypothesis is then postulated wherein a comparison of the frequency of different sets of keywords in a corpus of speeches will reflect either the different ideological leanings of that speaker or the different audience demands of a particular speech corpus. Furthermore, speakers with different ideological leanings may have different lexical frequency patterns in their respective corpora, again within the constraints demanded by a particular audience.

Recent work along these lines (Ahrens and Lee 2009) did not find evidence supporting these two conceptual models when the Senate Floor Speeches of U.S. Democratic and Republican Senators were contrasted as two large groups. However, it was noted that there were strong individual differences among senators, although these individual differences were outside the scope of that particular study. Thus, it will be useful to contrast the speeches of four different U.S. presidents to determine whether their individual differences in lexical choice reflect their respective political ideologies, and, furthermore, to determine whether they modulate their lexical usage based on the audiences that they are addressing.

To test this hypothesis, corpora were downloaded from on-line sources, including the State of the Union Addresses (SOUAs) for U.S. presidents from 1981 to 2006 (<http://c-span.org>) and Radio Addresses (RAs) for the same period (<http://presidency.ucsb.edu>), in order to demonstrate that there are different patterns of frequency in presidential usage for lexemes relating to STRENGTH/AUTHORITY (SF model) and NURTURANCE/EMPATHY (NP model). I predict, following Lakoff (1996, 2002), that Republican presi-

dents will use more lexemes related to the SF model, while Democratic presidents will use more lexemes related to the NP model.

## 2. Methodology

The choice of relevant lexemes was determined by using WordNet (<http://wordnet.princeton.edu>), an on-line lexical reference system in which nouns, verbs, adjectives, and adverbs are organized into synonym sets, each representing one underlying concept. Using WordNet 3.0, the appropriate sense was selected for each of the following four words: *strength*, *authority*, *nurturance*, and *empathy*. These four words were chosen because they are the top two metaphors for each model.<sup>1</sup> The appropriate senses are listed in (1) through (4) below.<sup>2</sup> The direct hypernyms given in WordNet are also listed. All concrete nouns and verbs in the definition and hypernym were then identified and are underlined as follows:

- (1) Selected sense and its direct hypernym for *strength*  
Selected sense: (n) force, forcefulness, strength (physical energy or intensity) *he hit with all the force he could muster; it was destroyed by the strength of the gale; a government has not the vitality and forcefulness of a living man*  
Direct hypernym: (n) intensity, intensiveness (high level or degree; the property of being intense)
- (2) Selected sense and its direct hypernym for *authority*  
Selected sense: (n) authority, authorization, authorisation, potency, dominance, say-so (the power or right to give orders or make decisions) *he has the authority to issue warrants; deputies are given authorization to make arrests; a place of potency in the state*  
Direct hypernym: (n) control (power to direct or determine) *under control*
- (3) Selected sense and its direct hypernym for *nurturance*  
Selected sense: (n) nurturance (physical and emotional care and nourishment)  
Direct hypernym: (n) care, attention, aid, tending (the work of providing treatment for or attending to someone or something) *no medical care was required; the old car needs constant attention*

- (4) Selected sense and its direct hypernym for *empathy*  
Selected sense: (n) empathy (understanding and entering into another's feelings)  
Direct hypernym: (n) sympathy, fellow feeling (sharing the feelings of others [especially feelings of sorrow or anguish])

After these lexemes were selected, they were listed in a table with their frequency from the British National Corpus (BNC) from Sketch Engine (<http://www.sketchengine.co.uk/>). I attempted to equate the lists for frequency, but as the lexemes from the SF model were much higher in frequency than the lexemes from the NP model, I decided to randomly select nine lexemes from each group. The list of lexemes associated with the NP model is: *sympathy*, *nourishment*, *sorrow*, *feeling*, *care*, *aid*, *attend*, *nurture*, and *nourish*; while the list for the SF model is: *dominance*, *authorization*, *potency*, *intensity*, *force*, *control*, *dominate*, *strengthen*, and *authorize*. A word list was created to search for all inflectional forms of these lexemes. These eighteen words, and their associated inflections, were then searched for in the corpora.

## 3. Corpus creation

The SOUA corpus was downloaded one speech at a time from the C-Span website (<http://c-span.org>), starting with Reagan in 1981.<sup>3</sup> All SOUAs from 1981 to 2006 were directly downloaded to text files. Each file was then imported into Microsoft Word, and the president's words in the speech were highlighted and counted with the word-count feature. In most cases, this meant that the heading was omitted (i.e., "President Ronald Reagan's Address before a Joint Session of Congress"). In other cases, information about where and when the speech was given, or who introduced the president, also had to be omitted from the word count. In the case of Bush Jr., indications of "(Applause.)" had to be deleted as well.<sup>4</sup> In short, every effort was made to include the words used by the president himself in the word count.<sup>5</sup> In addition, it is important to note that these speeches were given orally from a prepared text. The version that is being examined here is the version that was provided for the written, historical record, and the content may therefore vary slightly from the actual words that the president spoke.

The total and average word counts for the SOUAs for Democratic and Republican presidents are given in Table 1. Since some presidents gave

more than one SOUA in a given year (e.g., Bush Jr. gave two addresses in 2001, one on 27 February and one on 20 September), there are a total of twenty-eight speeches in this corpus.

Table 1. SOUAs included in current corpora<sup>6</sup>

Name	Year	Total	Political party	Word count	Average no. of words/speech
Reagan	1981–1988	8	Republican	36,652	4581.50
Bush Sr.	1989–1992	5*	Republican	20,461	4092.20
Clinton	1993–2000	8	Democratic	60,541	7567.63
Bush Jr.	2001–2006	7*	Republican	32,336	4619.43
Total		28		149,990	5356.79

\*Presidents gave more than one SOUA in a given year

Bill Clinton is, as has been noted by many pundits, the most prolix speaker in terms of total number of words.

All RAs were taken from the website <http://www.presidency.ucsb.edu/satradio.php>. All transcripts were saved as text files and all headers were removed. Headers comprised titles such as “The President’s Radio Address” and the date “April 7, 2001.” All word counts shown below in Table 2 are word counts without headers. After saving all 1,066 speeches as individual text files, a meta-file was created for each president (Reagan, Bush Sr., Clinton, and Bush Jr.), and word searches were run using WordSmith, Version 3 (<http://www.lexically.net/wordsmith/>).

Table 2. RAs included in current corpora

Name	Year	Total	Political party	Word count	Average no. of words/speech
Reagan	1981–1988	334	Republican	280,075	838.55
Bush Sr.	1989–1992	18	Republican	11,724	651.33
Clinton	1993–2000	407	Democratic	365,616	898.32
Bush Jr.	2001–2006	307	Republican	184,802	601.96
Total		1,066		842,217	790.07

WordSmith creates a concordance for all instances of the lexical item chosen, with links to the full-text. The concordances for each term were then printed out and read through. Acronyms were excluded from the analysis.<sup>7</sup> Data on the number of instances found were then saved into Excel spreadsheets for further analysis.

#### 4. Data analyses

For the analysis, I calculated the total token count and normalized that to the number of total tokens per 10,000 words in order to determine the overall pattern of usage. I then compared the frequency of use of NP lexemes and SF lexemes in each corpus for each president with the overall frequency of use in the BNC using z-statistics. All presidents use the NP lexemes and the SF lexemes significantly more frequently than is found in the BNC ( $p < .05$ ). The fact that both SF lexemes and NP lexemes occur more frequently in RAs and SOUAs than in the general corpus indicates that these lexemes represent a distinctive part of political language. Next, I compared whether proportions of lexemes used by the presidents significantly differ.<sup>8</sup>

It can be seen in Table 3 below that Clinton differs significantly from the Republicans overall in terms of NP lexeme usage, both in the two individual corpora and in the combined corpus. In addition, in terms of individual comparisons, Clinton differs in NP lexical usage from Reagan in both the two single corpora and in the combined corpus. He also differs from Bush Jr. in the combined corpus and in the RAs but not in the SOUAs. Lastly, he does not differ significantly from Bush Sr. either in the individual corpora or in the combined corpus.

The first finding, that Clinton uses NP lexemes more often than the three Republican presidents, supports the hypothesis put forward here – that Clinton’s viewpoint is fundamentally different from that of the Republicans. As a Democrat, he values the concepts of nurturance and empathy more highly, as evidenced by the fact that he uses words related to these concepts more often in both genres, the SOUAs, which speak to the general American public, and the RAs, which speak to his core constituents.

While Republicans as a group also use these lexemes, they do so significantly less frequently than Clinton. However, individual comparisons between the presidents also paint an interesting picture. While Clinton uses NP lexemes more often than Bush Sr., this difference does not reach significance in either corpus, indicating that perhaps political pundits were correct in claiming that Bush Sr. moderated his language to a certain extent to appeal to both Democrats and Republicans. Bush Jr., on the other hand, uses significantly fewer NP lexemes than Clinton in RAs but not in SOUAs. This seems to indicate his ability to control his language so that he can appeal to both the general audience of Americans and the more narrow audience of his core constituency, who is more likely to listen to his RAs.

This core constituency of Republicans is hypothesized to be cognizant and accepting of the viewpoint found in the SF model, while the general American audience can be considered to hold a wider range of views.

In Table 4 below, the pattern is slightly different. As predicted, Republicans do use lexemes from the SF model more often than Clinton does in the SOUAs, RAs, and the combined corpus.

In addition, with the exception of the comparison between Bush Jr. and Clinton in the SOUAs and Bush Sr. in the RAs, Republican presidents use significantly more SF lexemes in the SOUAs, the RAs, and the combined corpus.

The results from Tables 3 and 4 demonstrate that Reagan follows the conceptual viewpoint prototypically postulated for a Republican president – he uses more SF lexemes and fewer NP lexemes than Clinton. Bush Sr., however, shows no difference from Clinton in terms of the frequency of use of NP-related lexemes, but he does use more SF-related lexemes in his SOUAs, and, surprisingly, shows no difference from Clinton with respect to the use of SF-related lexemes in the RAs.<sup>9</sup> This contrasts with what is found for Bush Jr. When his lexeme usage is compared with Clinton's, Bush Jr. doesn't differ significantly for either SF lexemes or NP lexemes in the SOUAs. However, when speaking to his core constituency in his RAs, he does differ significantly from Clinton by using more SF lexemes and fewer NP lexemes. Bush Jr. is able to modulate his language to appeal to the general American population by using more compassionate terminology (hence, the reason for his title as a "compassionate conservative") in the general SOUAs, while using more authoritative and strength-related lexemes when talking to his base in the RAs.

In Table 5 below, a direct comparison is made between the proportion of SF lexemes and NP lexemes used by each president.<sup>10</sup> When the proportion of the NP lexemes versus SF lexemes in the SOUA and RA corpora is compared for each president, Clinton and Reagan both clearly follow the predictions made. Clinton uses significantly more NP lexemes than SF lexemes. Reagan, on the other hand, uses significantly more SF lexemes than NP lexemes. Bush Sr. does not show any difference in usage between SF lexemes and NP lexemes in either corpus. Bush Jr. uses roughly the same number of NP lexemes and SF lexemes in his SOUAs, but, as noted in the above discussion, significantly more SF lexemes in his RAs. Thus, unlike his father, Bush Jr. adjusts his language for the general American public in his SOUAs, but speaks the language of the SF model when he is talking to

Table 3. Z-statistic for Republicans versus Clinton (Democrat) in SOUAs, RAs, and SOUAs+RAs, comparing lexemes in the NP model

Corpora	Republicans	Democrat	Total lexemes (raw)		Corpora size		Total lexemes (raw)		z	p
			Rep. Pres.	Clinton	Rep. Pres.	Clinton	Rep. Pres.	Clinton		
SOUA	Reagan	Clinton	31	151	36652	60541	151	60541	-5.76	0.00**
	Bush Sr.	Clinton	36	151	20461	60541	151	60541	-1.89	0.03
	Bush Jr.	Clinton	65	151	32336	60541	151	60541	-1.46	0.07
	Republicans	Clinton	132	151	89449	60541	151	60541	-4.46	0.00**
RA	Reagan	Clinton	207	816	280075	365616	816	365616	-14.95	0.00**
	Bush Sr.	Clinton	19	816	11724	365616	816	365616	-1.39	0.08
	Bush Jr.	Clinton	278	816	184802	365616	816	365616	-5.72	0.00**
	Republicans	Clinton	504	816	476601	365616	816	365616	-13.5	0.00**
SOUA + RA	Reagan	Clinton	238	967	316727	426157	967	426157	-16.08	0.00**
	Bush Sr.	Clinton	55	967	32185	426157	967	426157	-2.0547	0.02
	Bush Jr.	Clinton	343	967	217138	426157	967	426157	-5.8007	0.00**
	Republicans	Clinton	636	967	566050	426157	967	426157	-14.06	0.00**

Table 4. Z-statistic for Republicans versus Clinton (Democrat) in SOUAs, RAs, and SOUAs+RAs, comparing lexemes in the SF model

Corpora	Total lexemes (raw)		Corpora size		z	p		
	Republicans	Democrat	Rep. Pres.	Clinton				
SOUA	Reagan	Clinton	157	36652	92	60541	8.26	0.00**
	Bush Sr.	Clinton	50	20461	92	60541	2.73	0.00**
	Bush Jr.	Clinton	67	32336	92	60541	1.94	0.03
	Republicans	Clinton	274	89449	92	60541	5.94	0.00**
RA	Reagan	Clinton	546	280075	570	365616	3.74	0.00**
	Bush Sr.	Clinton	17	11724	570	365616	-0.29	0.38
	Bush Jr.	Clinton	524	184802	570	365616	10.04	0.00**
	Republicans	Clinton	1087	476601	570	365616	7.41	0.00**
SOUA + RA	Reagan	Clinton	703	316727	662	426157	6.63	0.00**
	Bush Sr.	Clinton	67	32185	662	426157	2.29	0.01*
	Bush Jr.	Clinton	591	217138	662	426157	10.05	0.00**
	Republicans	Clinton	1361	566050	662	426157	9.30	0.00**

a narrower audience, one that agrees with his own worldview. However, Bush Sr.'s small corpus size, especially with respect to his RAs, leaves open the possibility that the findings presented for his corpus could potentially change if the word count increased.

Table 5. Comparisons of NP lexemes versus SF lexemes (raw frequency) in SOUAs, RAs, and SOUAs+RAs corpora

Corpora	Presidents	Total NP lexemes	Total SF lexemes	Corpora size	z	p
SOUA	Reagan	31	157	36,652	-9.19	0.00**
	Bush Sr.	36	50	20,461	-1.51	0.07
	Bush Jr.	65	67	32,336	-0.17	0.43
	Clinton	151	92	60,541	3.78	0.00**
RA	Reagan	207	546	280,075	-12.35	0.00**
	Bush Sr.	19	17	11,724	0.33	0.37
	Bush Jr.	278	524	184,802	-8.69	0.00**
	Clinton	816	570	365,616	6.61	0.00**
SOUA + RA	Reagan	238	703	316,727	-15.16	0.00**
	Bush Sr.	55	67	32,185	-1.09	0.14
	Bush Jr.	343	591	217,138	-8.11	0.00**
	Clinton	967	662	426,157	7.56	0.00**

In sum, the findings from this study on lexical frequency patterns suggest that it is possible to search for patterns of lexical usage to examine whether speakers are biased toward a particular conceptual model, and, moreover, whether they adjust that model depending on the audience they are addressing.

### 5. Collocational patterns

The above analyses looked solely at the numbers of instances in which particular lexemes were used and have drawn conclusions based on statistical analyses of these lexical usages. However, collocational patterns can also elucidate the differences between the Republican presidents and Clinton. For example, a comparison between Tables 6 and 7 below demonstrates that Clinton is more concerned with *health care* and *child care* than Republicans are (especially since the Republican's corpus is over 100,000 words larger). Clinton also uses the form *care* more often in active predicates such as *to care* and *take care*. In addition, Clinton's discussion of health care includes *quality care*, *preventive care*, *managed care*, *home*

*care*, *term care*, and *medical care*. The Republicans only refer to *managed care*, *term care*, and *medical care* and do so much less frequently than Clinton.

Table 6. Lexemes found immediately to the left of *care* in Clinton's RAs

Lexeme	Raw frequency count	Lexeme	Raw frequency count
<i>health</i>	406	<i>quality</i>	16
<i>child</i>	65	<i>home</i>	12
<i>to</i>	28	<i>preventive</i>	11
<i>medical</i>	24	<i>take</i>	11
<i>managed</i>	21	<i>term</i>	10

Table 7. Lexemes found immediately to the left of *care* in Republican's RAs

Lexeme	Raw frequency count	Lexeme	Raw frequency count
<i>health</i>	137	<i>managed</i>	4
<i>child</i>	11	<i>of</i>	4
<i>and</i>	7	<i>take</i>	4
<i>medical</i>	7	<i>term</i>	4
<i>to</i>	7	<i>the</i>	4

This suggests that Clinton's use of *care* follows the hypotheses put forward in the NP model, where the nation is a family, and the morality of a family is judged upon its ability to nurture and take care of its members.

In addition, when we compare the lexemes found immediately to the left of *force* in Clinton's RAs with the Republican RAs in Tables 8 and 9 below, it is obvious that Clinton's focus is on a *work force* or *task force* while Republicans are split between the concepts of a *work/task force* and the *air/multinational/military force*.

Table 8. Lexemes found immediately to the left of *force* in Clinton's RAs

Lexeme	Raw Frequency count	Lexeme	Raw Frequency count
<i>work</i>	24	<i>strongest</i>	5
<i>task</i>	12	<i>a</i>	4
<i>to</i>	7	<i>and</i>	4
<i>air</i>	6	<i>fighting</i>	4
<i>the</i>	6	<i>implementa- tion</i>	4

Table 9. Lexemes found immediately to the left of *force* in the Republican's RAs

Lexeme	Raw Frequency count	Lexeme	Raw Frequency count
<i>air</i>	23	<i>multinational</i>	9
<i>task</i>	22	<i>of</i>	8
<i>work</i>	20	<i>by</i>	7
<i>a</i>	10	<i>military</i>	6
<i>to</i>	10	<i>and</i>	5

In addition, if lexical meanings are taken into account, such that the use of *force* in *work force* is not counted as an instance that has to do with STRENGTH, the data presented above would change. However, although a detailed analysis of the use of each lexeme is precluded by the length of this paper, a preliminary analysis indicates that counting only the related senses would continue to support the hypothesis that Clinton (a Democrat) uses more word senses with the NP model, and the Republicans use more word senses associated with the SF model.

In line with the proposal that word senses should be taken into account, it should also be noted that it is, in fact, difficult in many cases to assign word senses in context. On the one hand, done on an individual basis, it is time consuming. On the other hand, words may have more than one sense within a particular context, or it may be difficult to decide which sense is intended by the speaker in that context (Ahrens, Chang, Chen, and Huang, 1998). One way to deal with this issue would be to look at the collocations, as in the above tables, and identify which collocational patterns are related to the meaning of *strength* (e.g., one possibility is that *a force*, *to force*, *military force*, *multinational force*, and *air force* count as being related to the sense of *strength*). Of course, different researchers may have different ideas about whether or not these meanings (or others) should be classified as having to do with *strength*. This is why, for this first study in using lexical frequency patterns, the lexeme was considered the appropriate level on which to run the analyses. However, as long as the sense identification method is principled (something that was not explicated in the above example) and replicable, it should be considered as an additional level of analysis in future lexical frequency pattern studies.

## 6. Conclusion

The proposal put forth in this paper is that lexical frequency patterns may shed light on the underlying conceptual model utilized by a speaker for a particular audience. This proposal assumes that once a conceptual model is proposed, key lexemes related to the model can be identified, and associated lexical items can be found through WordNet's hypernyms. Next, these items are searched for in the corpora, and proportional differences are examined between groups. And last, collocational patterns (i.e., one to the left and one to the right) of key words should be analyzed to determine whether the detailed linguistic data support the coarser frequency pattern account.

In the particular case analyzed in this paper, the conceptual model was identified by Lakoff (1996, 2002) on the basis of conceptual metaphor analysis. The top two source domains for each conceptual paradigm (i.e., STRENGTH and AUTHORITY from the strict father paradigm, and NURTURANCE and EMPATHY from the nurturing parent paradigm) were identified, and associated words were found by taking the nouns and verbs in the WordNet hypernym associated with each concept. A subset of these associated words was searched for in well-defined corpora for two particular political speech genres – the State of the Union Addresses and Radio Addresses. When the proportional data is examined, Lakoff's (1996, 2002) hypothesis that Democrats and Republicans view the world differently receives support from the Reagan and Clinton data. It also suggests, as political pundits have noted, that Bush Jr. is adept at directing his messages to a particular audience, since he is using his RAs to renew his ties with his core party members, while moderating his message with lexical items from both conceptual paradigms when he speaks to mainstream Americans in the SOUAs. Preliminary analyses of the collocational patterns of two key words indicate that analyses based on the appropriate senses of the lexemes would also support the above findings, although further study is needed for a more in-depth understanding of the collocational data.

In sum, this paper suggests that small, narrowly focused corpora are suitable for identifying different viewpoints through an examination of lexical frequency patterns. This method of testing cognitive models avoids the circularity apparent in many attempts to establish such models based solely on conceptual metaphors and paves the way for a greater understanding of the way humans organize and use language to conceptualize and to persuade.

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## Notes

1. See Lakoff (2002: 99) for the list of metaphors in the SF model, and Lakoff (2002: 135) for metaphors in the NP model. Lakoff discusses how these metaphors are hierarchically ordered. That is, while the SF model also has NURTURANCE as a metaphor, it is lowest on the hierarchy, and, furthermore, exists to promote MORALITY AS STRENGTH.
2. Note that we selected one sense for *strength* and *authority* from the list of senses in WordNet 3.0 (sense three for *strength* and sense one for *authority*). Only one sense is listed in WordNet for *nurturance* and *empathy*.
3. C-Span incorrectly lists Carter as giving a SOUA in 1981. The actual file under Carter's name is, in fact, Reagan's first SOUA (as accessed on February 6, 2006, at [http://www.c-span.org/executive/transcript.asp?cat=current event&code=bush admin&year=1981](http://www.c-span.org/executive/transcript.asp?cat=current%20event&code=bush%20admin&year=1981)). This has not been included in the Carter corpus compiled for this paper, but it is, of course, included in the Reagan corpus.
4. "Bush Sr." refers to George H. W. Bush, and "Bush Jr." refers to George W. Bush, following the usage in Charteris-Black (2005).
5. Microsoft Word counts the dash punctuation mark as one word when it is written as two short hyphens close together with a space on either side or as one short hyphen with a space on either side (i.e., as " - " or as " - "). When it

is written as a long, unbroken line without spaces on either side, as in “—”, the program does not count it as a word. In addition, in some speeches, only a short hyphen is used without a space on either side, which the word-count program then interprets as a hyphenated word. Ideally, for the most precise word count possible, each speech should be re-edited for uniformity among the various types of dash marks used. However, such editing carries the risk of altering the intent of the original and was not carried out for this study.

6. Please note that the word count differs slightly from Ahrens (2006), as the headers for the speeches were removed for this study.
7. *AIDS* was the only acronym found that needed to be excluded.
8. Since we are comparing proportions, we calculate the relevant z-statistic and set the alpha-level for significance at .05 for comparison between Democrats (i.e., Clinton) and Republicans (one asterisk indicates  $p < .05$ , and two asterisks indicate  $p < .01$ ). However, in order to correct for multiple comparisons, we use the Bonferroni correction when comparing directly between individual presidents. In these cases, the alpha-level is .01 (one asterisk indicates  $p < .0167$ , and two asterisks indicate  $p < .0033$ ). The z-statistic is used to compare proportions. For example, in this paper, two kinds of lexemes (A1 and A2) are being compared in a particular president's corpus of speeches. The proportion of A1 ( $p1$ ) and the proportion of A2 ( $p2$ ) cannot be compared directly because frequencies of lexemes differ overall in a large-scale corpus. However, this can be dealt with by testing the ratios of frequencies based on the result of Scott and Seber (1983). For example, if the ratio of frequencies of two kinds of lexemes in a large-scale corpus is a constant, say  $a$  (in other words,  $p1 / p2 = a$ ), then what is at issue is whether the ratio in a politician's speech is higher than the ratio in a large-scale corpus. So the null hypothesis can be set as  $p1 = a * p2$ , or, equivalently, as  $p1 - a * p2 = 0$ . Thus, what is being compared is the difference between  $p1$  and  $a * p2$  rather than the difference between  $p1$  and  $p2$ . If the null hypothesis is rejected, and  $p1 - a * p2 < 0$ , then it means that this politician says more A2 lexemes than A1 lexemes relative to a large-scale corpus. If the null hypothesis is rejected, and  $p1 - a * p2 > 0$ , then this politician says more A1 lexemes than A2 lexemes relative to a large-scale corpus (Professor Cheng Chung-Ping, personal communication, 12 January 2009).
9. It must be noted in this regard that the corpus size for Bush Sr.'s RAs is very small compared to those of other presidents.
10. Again, in order to correct for multiple comparisons, we use the Bonferroni correction when comparing the proportion of SF lexemes and NP lexemes used. Thus, in Table 5, the alpha-level is .01 (one asterisk indicates  $p < .0167$ , and two asterisks indicate  $p < .0033$ ).

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## Metaphor, constructional ambiguity and the causative resultatives

Beate Hampe

### 1. Introduction: Metaphor in the causative resultatives

Of all argument structures in the “resultative family” (Goldberg and Jackendoff 2004), the so-called *causative resultatives*, comprising the *Caused-Motion Construction* (CMC, cf. 1)<sup>1</sup> and the *Resultative Construction* (RC, cf. 2), have received by far the largest amount of attention from construction grammarians (Goldberg 1995; Goldberg and Jackendoff 2004: 535–538). This is partly due to early postulations in Construction Grammar, which claimed the latter to be a metaphorical version of the former (Goldberg 1995: 81–94).

- (1) *The warm air pushes other air* [<sub>PP</sub> *out of the way*]. (W2B-025)
- (2) *If you have fresh maggots, riddle them* [<sub>AdjP</sub> *clean*] *of the sawdust*. (W2D-017)

Traditionally, the causative resultatives are also known as “complex-transitive” (henceforth *ctr*.) clause patterns (e.g. Quirk et al. 1985), because in these patterns the object-NP is followed by an object-related adverbial (cf. 1) or complement/predicative (cf. 2), formally most typically realized as a prepositional phrase or an adjectival phrase, respectively.

In construction grammar, object-related adverbials and predicatives have been subsumed under the notion of the *resultative phrase* (RP), because both designate the endpoint of a change – either of location (cf. 3a) or of state (cf. 3b) – which is intentionally caused by the referent of the subject-NP and undergone by the object-NP referent, the so-called *object host* (Goldberg and Jackendoff 2004).

- (3) a. *Semantics CMC:* [X CAUSE (Y MOVE Z)]  
b. *Semantics RC:* [X CAUSE (Y BECOME Z)]