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Are There Language Markers of Hubris in CEO Letters to Shareholders?

Abstract This paper explores whether *DICTION* text analysis software reveals distinctive language markers of a verbal tone of hubris in annual letters to shareholders signed by CEOs of major companies. We analyze 193 letters to shareholders, comprising about 368,000 words, focusing initially on 23 letters signed by CEOs who are alleged to be hubristic: Browne (BP), Goodwin (Royal Bank of Scotland) and Murdoch (News). Their language use is statistically significantly high in terms of the *DICTION* master variable, REALISM. Based on further analysis, we contend that language high in REALISM is not a distinctive marker of hubris but is likely to be a genre effect that is common in CEO letters to shareholders. We draw attention to the restricted capacity of *DICTION* to capture subtlety of language in CEO letters to shareholders.

Keywords Chief executive officer; *DICTION*; hubris; letters; realism

A CEO's annual report letter to shareholders (henceforth, 'CEO letter') is an important means by which corporations reveal their leader's espoused perspectives and their standpoints as 'belief-forming institutions' (Tinker 1985, p. 82). In this paper we explore whether the widely-used text analysis software program, *DICTION* (see Appendix 1 for a brief description), reveals distinctive indicators of a verbal tone of hubris in the annual letters to shareholders signed by CEOs of major companies.

Hubris is 'a pretension to an arrogant form of godliness' that is often accompanied by a nemesis complex or 'a vengeful desire to confront, defeat, humiliate and punish an adversary' (Ronfeldt 1994, p. vii). It is 'insolence or arrogance caused by inordinate pride ... [and] exaggerated self-confidence' (*New Webster's Dictionary of the English language*. College edition 1975, p. 731). Persons with hubris often lack humility and contact with reality. They are prone to overestimate their competence or capabilities.

We complement and extend prior study by Craig and Amernic (2014) of *DICTION*'s potential to identify linguistic signs of hubris in the speeches of CEOs of large companies.

We do so in three ways. First, we conduct further exploration of markers of hubristic language in the discourse of the two CEOs analysed in their study (Browne, BP; Murdoch, News). Second, we focus on written discourse (CEO letters) rather than oral discourse (CEO speeches). Third, we analyse the discourse of a third major CEO (Goodwin, Royal Bank of Scotland).

The word ‘hubris’ is invoked with increasing frequency in newspapers, business periodicals, and scholarly journals – often as a demeaning one-word insult directed at a corporate, political or military leader. For example, Engelen et al. (2012, p. 360), in assessing the causes of the financial crisis of 2007/2009, claim that: ‘Political and technocratic elites were hubristically detached from the process of financial innovation...’ Barnard (2008/2009, pp. 408-09) claims ‘CEOs accustomed to success ... often become “infected with hubris.”’ Picone et al. (2014, Table 2, p. 455) outline the ‘good side of hubris’ and the ‘bad side of hubris’ in terms of effect on executive judgments and decisions in organizations. The characterization of CEOs as hubristic is not surprising in view of the assessment of Tourish et al. (2010, pp. S49-S52) that business school leaders use promotional materials and pedagogic philosophies to build a self-image of hubris among future business leaders.

Smith (n.d.) argues that ‘the fatal flaw of hubris’ is the cause of many military failures and that there is a danger of hubris in many military leaders not ‘balanc[ing] humility with power’ but instead preferring to embrace ‘a leadership vision overshadow[ed] by self-aggrandizement.’ Sternberg (2008, p. 367) claims that Napoleon’s ‘disastrous invasion of Russia’ was motivated ‘more by hubris than by France’s need to have Russia in its empire.’

Berglas (2014) avers that ‘Hubris ... [is] not just narcissism; it’s much more dangerous than that.’ Such a view is consistent with Owen and Davidson’s (2009, p. 1398) proposal that of the fourteen clinical symptoms of what they term ‘hubris syndrome’, nine were clinical features of narcissism – a cluster B personality disorder in DSM-IV [American Psychiatric

Association's Diagnostic Statistical Manual, fourth edition]. Thus, hubris is regarded as an extension of the nine symptoms of narcissism to include five symptoms that are classified as unique to individuals with hubris. Such individuals:

1. Regard their outlook and interests as identical with those of the nation or organization.
2. Have a tendency to speak in the third person or use the royal 'we.'
3. Have an unshakeable belief that they will be vindicated by History or God.
4. Are restless, reckless and impulsive.
5. Have a tendency to allow their 'broad vision' of the moral rectitude of a proposed course to obviate the need to consider practicality, cost or outcomes.

Hubris is a vogue word with potent impact. It is similar to an 'ideograph' (McGee 1980): that is, a word evoking an emblematic image redolent of an important concept or emotion (see also Stevenson 1938; Williams 1983). Writers in the scholarly literature in medical science and business have urged that a 'hubris test' be applied to identify (and perhaps remove, or at least ameliorate the effects of) 'hubristic leaders.' For a review of works in the business academic literature, see Craig and Amernic (2014). Garrard et al. (2013) have employed various statistical tests to assess differences in spoken discourse samples of (allegedly) hubristic and non-hubristic former UK prime ministers. If hubris is as dangerous a condition as its pejorative connotation dramatically signifies, then a test to reveal language signs of hubris is desirable.

We focus on the written words of CEOs of major listed companies having a global presence. We were motivated to do so because these words have considerable potency and influence (Amernic and Craig 2006) and set the 'tone at the top' of an organization (Amernic et al. 2010). As with Jaques (2002, p. 9), we recognize (and are motivated by) the broad social power of CEOs and the capacity for 'leaders' words [to] sculpt reality' (Vignone 2012, p. 35). By exploring the possibility that *DICTION* systematically captures language markers

of the hubris of CEOs of large corporations in their signed annual report letters to shareholders, we complement Garrard et al.'s (2013) efforts to determine 'linguistic biomarkers of hubris syndrome in the discourse of political leaders.' In our case, language use in the CEO's letter is studied, and *DICTION* software is employed.¹ We are motivated too by Lord Owen's (2011, p. 145) call for BP and the Royal Bank of Scotland [RBS] 'to be the subject of serious case studies for hubris.' Prior qualitative studies of the language use of Browne, Goodwin and Murdoch in the CEO letters signed by each of them (see later) have concluded that they exhibited signs of hubris.

We find initially that words indicative of *DICTION*'s master variable REALISM² are the strongest marker in the letters of Browne, Goodwin, and Murdoch's, thereby potentially contributing to literature which has explored linguistic markers of hubris (e.g., Garrard et al. 2013). Consequently, we find that CEO letter language high in *DICTION*'s REALISM is not a distinctive marker of hubris but that it is indicative of a broader sample of CEO letters. We attribute this to a likely genre effect in CEO letters to shareholders, and we discuss some implications of this.

We agree with Murphy (2013, p. 57) that 'macro analysis of key words and key semantic domains needs to be complemented by close phraseological analysis, [because this is where] the nuances of a message are to be found'. However, we also support the view that exploring *CEO-speak* using text analysis software programs is important '... as a screen when dealing with even moderately sized corpora'; as a mechanism for encouraging theoretical thinking about various computer-based measures; and as a complement to 'much more labor-intensive

¹ A wide range of published and non-published research using *DICTION* has been conducted in diverse fields, as referenced on www.dictionsoftware.com. A collection of 20 research studies in the corporate world has been published by Hart (2014).

² See Appendix 1 for a description of master variables and other measures in *DICTION*. See Appendix 2 for the components of the REALISM master variable.

“close reading” approaches ... in seeking a deeper understanding of leadership language and its subtleties, nuances and context’ (Craig and Amernic 2014, p. 84).

The use of text analysis software to explore *CEO-speak* can be beneficial in encouraging researchers to think critically about theoretical linkages between empirical constructs such as *DICTION*’s master variables (here, *REALISM*) and important leadership phenomena under study (hubristic language). It also permits examination of substantial amounts of *CEO-speak* to expose broad patterns.

In the following section we explore literature that has canvassed the characteristics of hubris. We outline the importance of knowing whether CEOs use hubristic language in CEO letters to shareholders and review prior studies of CEO language and hubris. Thereafter, we provide further details of our method and sample, including a brief outline of the features of *DICTION*. We then present results, offer discussion and conclusions, and suggest issues for further research.

Literature Review

Why understanding the hubris of CEOs is important

Kellaway (2012, n.p.) vividly captures the idea of hubris by linking it to the probability that CEOs ‘get so high on power’ that they ‘lose the plot’. Trumbull (2010) warns that hubris leads to a ‘primal danger’. Roll (1986) introduced a ‘hubris hypothesis’ to the finance literature. He explained why CEOs made ‘large corporate acquisitions despite well-known evidence that such deals generally do not deliver the hoped-for results’ (Hiller and Hambrick 2005, p. 306). According to Gabriel (2012, p. 242) there is a strong case that the broad practice of management is ‘... easily given to hubris ... [and] often lapse[s] into the hubris of total control – the belief that everything is, can be and must be predicted, planned for and controlled’. We are concerned with extreme manifestations of CEO hubris — not merely with

Gabriel's observation that management as a profession is 'easily given to hubris.' However, presuming that Gabriel's observation is correct, the top management leadership role of large, powerful corporations is a potentially fertile ground for more extreme examples of hubris to flourish.

Craig and Amernic (2014, pp. 71-72), in summarizing some of the recent pertinent literature on hubris, explained CEO hubris was a corporate dysfunction. They cited studies that had attempted to capture CEO hubris by one-dimensional measures. Li and Tang (2010, p. 51), for example, describe the essence of CEO hubris as 'overestim[ing] the correctness of one's own judgment.' However, such a view ignores emotionally vital aspects of hubris suggested by Button's comment that '...hubris is a vicious response to fear...' (2012, p. 330). Button adds important nuance by contending that hubris:

... is best understood as a branch of moral cruelty ... [and] entails the assertion of superiority through the exuberant, unabashed, and contemptuous violation of another person's equal moral standing ... [and] is marked by a settled disposition to reduce, shame, or humiliate others as a means of asserting, consolidating, or relishing in one's own relative pre-eminence (2012, p. 312).

Button observes that arrogance (or overweening pride) is 'wholly self-referential' whereas hubristic persons 'take others seriously enough to abuse, dishonor, or insult them for their own ends and to luxuriate in the expenditure and spectacle of their unrestrained contempt' (p. 312).

Hiller and Hambrick (2005, p. 298) contend that CEO hubris is related to the concept of core self-evaluation [CSE] or 'how individuals broadly evaluate themselves and their relationship to their environment across situations.' At the high end of the CSE conceptual continuum (known as hyper-CSE), Hiller and Hambrick (2005, p. 298) claim that some CEOs 'are inclined to take grandiose actions that can easily lead to catastrophic results—as a result

of their personal conviction that they can do no wrong ... Thus, the high end of the CSE scale aligns very well with what is colloquially called “hubris”.

We focus on the CEO letter because it is bound intimately with a corporation’s annual report, accompanying audited financial statements, and annual corporate accountability cycle. We are mindful of argument that financial reports facilitate destructive narcissism in some CEOs because financial statements are high-profile report cards on the CEO’s performance — something over which the CEO could exercise significant control (Amernic and Craig 2010). In similar vein, Ronfeldt (1994, p. 44) drew attention to the likelihood that hubris will appear in ‘the realm of the [capital] market, [because of] its increasingly global enterprises and its enormous flows of capital and critical technologies.’

Hubris, Language and CEOs

The letter to shareholders of CEOs of a large, powerful, corporation provides a potentially important setting to investigate linguistic signs of a CEO’s hubris. The CEO letter accompanies the audited financial statements and is a prime, high-profile medium for enacting hubris.

Our initial sample comprises CEO letters of each of Browne, Goodwin and Murdoch. This selection was prompted by recent qualitative research studies, journalistic opinion, media punditry, and biographies which have all contended that the language used by each of these CEOs exhibited strong signs of hubris. We explore whether such conclusions (based largely on *qualitative* research methods) could be validated by a *quantitative* research approach using the text analysis software program, *DICTION*. Below, we present brief cases that Browne, Goodwin and Murdoch were hubristic personalities prone to exhibit hubristic language.

Browne

Craig and Amernic (2014) claim that the following outpouring of moral rectitude in Browne's 2010 memoir is a 'hubristic passage':

This, then, is my story ... about the insights I gained as I transformed a company, challenged a sector, and prompted political and business leaders to change. My adventures included going toe-to-toe with tyrants, despots and elected leaders while bringing them around to my way of thinking... (Browne with Anderson, 2010, p.5)

Many other observers have concluded also that Browne was hubristic, and that he was instrumental in the development of 'a climate of collective hubris within BP itself' (Owen 2010, p.11; see also Owen 2009, pp. 602-603). Owen claims further that hubris in BP

...began to develop during the tenure of its then chief executive, Lord Browne. It appears that Lord Browne, after the death of his mother, who had a profound influence on him, developed many of the features of hubris syndrome during the last few years of his tenure (2011, p. 146).

There are many other references to Browne's (alleged) hubris, for example:

... his accomplishments went to his head ... he failed to heed or seek the advice of those who could have helped him take better decisions ... he began to lose his critical faculties ... became increasingly cut off and out of touch ... Many in the higher echelons of BP management were soon privately expressing misgivings [Browne] had begun to believe his own PR. In a clear sign of hubris, he committed the company to production growth targets of 7% per annum and for years refused to moderate them, even though many of his senior executives were telling him that the targets were unachievable ... (*m2m Evolution*, 2007).

A qualitative close reading of Browne's CEO letters by Amernic et al. (2010, chapter 5) identified a 'heroic' theme as a prominent root metaphor in Browne's 1998 letter: TOP MANAGEMENT IS A HERO. Amernic et al. (2010, p. 98) explored the metaphoric structure of this theme, concluding that Browne led in a top-down fashion; believed he knew what was best and all there was to know; had little regard for followership; believed he was imbued with extraordinary insight, wisdom, and other abilities; and was likely to not appreciate criticism, even if constructive. These leadership characteristics accord with features of the 'hubris syndrome' proffered by Owen and Davidson (2009).

Based on close readings of Browne's CEO letters (Amernic et al. 2010); a study of CEO hubris in Browne's speeches (Craig and Amernic 2014); and opinions of a leading authority on hubris (Owen 2009; 2010; 2011), we maintain that the language in Browne's CEO letters to shareholders was likely to evidence hubris.

Goodwin

Hubris in the corporate narratives of an [anonymous] bank CEO's letter to shareholders was reported by Brennan and Conroy (2013). We have identified the CEO concerned as Sir Fred Goodwin, Group Chief Executive of the Royal Bank of Scotland [RBS], 2000 to 2008. The word length of each of the CEO letters to shareholders issued during Sir Fred Goodwin's tenure as CEO of the RBS matches that reported by Brennan and Conroy (2013, Table 1, p. 182). Many other descriptive features of their 'anonymous' bank CEO match Goodwin: the bank emerged as a 'global player' (p. 175); 'the CEO pursued an acquisitive strategy' (p.175); 'the CEO engaged in multiple takeovers throughout the term of office ... [and the company involved experienced] extreme success followed by extreme failure' (p.181).

Brennan and Conroy (2013) used manual content analysis techniques to explore Goodwin's letters. They acknowledged that they used 'no coder cross-check'; that their

analysis was ‘highly subjective’ [this expression is used four times]; that their method was ‘difficult to replicate’; and that the ‘validity and reliability’ of their study ‘requires further testing’ (p. 185). Despite these limitations, and although noting the need for ‘more robust benchmarks to provide greater evidence’ (p. 190), they concluded that they had ‘demonstrated the existence of hubris in the CEO letters’ of their anonymous CEO [Goodwin]; and that their results ‘point to hubris syndrome in the character of the CEO’ (p. 190).

Owen (2011, p. 146) claims that hubris existed in RBS under Sir Fred Goodwin; and that it is ‘in the public interest that we know more about Goodwin’s ... state of mind ... psychological state and personality.’ The popular business press contains many claims of Goodwin’s hubris. For example, Brummer, writing in the *Daily Mail* (UK) on 20 January 2009, refers to Goodwin’s ‘arrogance’, ‘extraordinary confidence’, contempt for competitors; belief that he ‘knew better than anyone else’; belief that no one could ‘match his genius’; and likened Goodwin’s behavior to that of a person who ‘behaved as if he ... walked on water’ (‘Hubris, overarching vanity and how one man's ego brought banking to the brink.’ <http://www.dailymail.co.uk/debate/article-1123161/ALEX-BRUMMER-ANALYSIS-Hubris-overarching-vanity-mans-ego-brought-banking-brink.html> n.p., accessed September 11, 2013.)

Murdoch

Based on a close reading of Murdoch’s language in his annual report letter to shareholders as Chairman and CEO of News Corporation in 2010, Amernic and Craig (2013) concluded that Murdoch ‘appear[s] contemptuous of many, to be boastful and gloating, arrogant, hubristic, patronizing...’ (p. 383). They cited some specific text written by Murdoch to support a conclusion that Murdoch had a ‘strong hubristic personality’ (p. 384) and that his use of words was ‘consistent with hubris’ (p. 385).

The popular and periodical press has many references to Murdoch's hubris, for example: in articles such 'One Word for the Murdochs: Hubris, baby, Hubris' (Retrieved from <http://noplaceforsheep.com/2011/07/19/> on 13 September 2013). Curtin (2005, p. 168) refers to Murdoch's 'display of hubris' in remarks in a speech in London in 1993 which were a 'direct challenge to Party supremacy [of the Communist Party in China] (p. 159).' Brendon (2012, p. 6) claims that Murdoch's 'unparalleled accumulation of power' and his 'monopolising [of] the channels of communication' bred hubris in him.

Method

The study reported here is conducted in two-stages. In Stage 1, we analyze 34,500 words in 23 annual report letters to shareholders signed variously by BP's Chief Executive, Lord Browne (letters from 1998 to 2006); Royal Bank of Scotland's [RBS] Group Chief Executive, (Sir) Fred Goodwin (letters from 2000 to 2008); and News Corporation's Chairman and CEO, Rupert Murdoch (letters from 2007 to 2011). Goodwin was knighted in 2004 for services to banking. His knighthood was annulled in 2012. We presume that Browne, Goodwin and Murdoch were hubristic personalities; that their CEO letters contain distinctive language markers of hubris; and that any common lexical pattern in their letters reflected a common verbal tone of hubris. As we describe later, we found that the CEO letters of Browne, Goodwin, and Murdoch possessed statistically significant high out-of-range scores for the *DICTION* master variable REALISM; and that this finding stems largely from a consistently high score for REALISM's component dictionary variable, HUMAN INTEREST (Hart and Carroll 2013, p. 9). Such a finding is surprising because it seems to be at odds with at least two of the 14 symptoms of the 'hubris syndrome' identified by Owen and Davidson (2009, with italics applied):

- Symptom #7: Excessive confidence in the individual's own judgment and *contempt for the advice or criticism of others*;
- Symptom #11: *Loss of contact with reality*; often associated with progressive isolation.

Hubristic persons possessing symptoms #7 and #11 would be expected to use language that evidenced their contempt for other human beings and their detachment from reality.

Based on the surprising results of our Stage 1 analysis, in Stage 2 we then used *DICTION* to investigate the verbal tone characteristics of a broader sample of 168 CEO letters of other major companies (about 334,000 words). Principally, we compare our Stage 1 results with a sample of letters of CEOs of FTSE 100 and FORTUNE 500 companies; and with letters by two (allegedly) *non-hubristic* CEOs, Rick Wagoner (General Motors) and Haruka Nishimatsu (Japan Air Lines). We find that this broader sample is also characterized by very high REALISM/HUMAN INTEREST results. This suggests that rather than identifying *DICTION* markers of hubris in the CEO letters of Browne, Goodwin and Murdoch, we have revealed the language pattern of a *communication genre* (Swales 1990) — that is, of the letters to shareholders of CEOs of large companies more generally.

DICTION

In Stage 1, we use *DICTION* text analysis software to analyse nine letters to shareholders of BP, from 1998 to 2006 (comprising about 13000 words), signed by Browne as Group Chief Executive; nine letters to shareholders of RBS, from 2000 to 2008 (comprising about 8000 words), signed by Goodwin as Group Chief Executive; and five letters to shareholders of News Corporation, from 2007 to 2011 (comprising about 13500 words), signed by Murdoch as Chairman and CEO.

DICTION 'is a dictionary-based package that examines text for its verbal tone' (Hart 2001, p. 43). For a fuller explanation of key features of *DICTION*, see Appendixes 1 and 2. We selected *DICTION*'s 'average 500 word' option for all of our analyses. Of the 36 available comparative dictionaries in *DICTION*, six are in a class designated as 'Business' [Corporate Financial Reports; Corporate Public Relations; Financial News; Legal Documents; Magazine Advertising; TV Advertising]. We selected the Corporate Financial Reports [CFR] dictionary for all analyses because it best matched the intrinsic nature of our subject text. The CFR dictionary is compiled exclusively from samples of *written* text in annual financial reports. The next best alternative comparative dictionary, Corporate Public Relations, included *non-written* text, such as speeches and public pronouncements drawn from sources other than annual financial reports. *DICTION*'s standard word lists have restricted capacity to capture subtlety of language in CEO letters. Mindful of this, it would be beneficial if future research took advantage of *DICTION*'s facility to develop custom dictionaries that focused on particular keywords that are believed to indicate hubris.

We analyzed the letter corpus of each of Browne, Goodwin and Murdoch to identify any common patterns of language in respect of *DICTION*'s five master variables (ACTIVITY, OPTIMISM, CERTAINTY, REALISM, COMMONALITY) and its four calculated variables (INSISTENCE, EMBELLISHMENT, VARIETY, COMPLEXITY). For each of its variables, *DICTION* reports scores that represent a normal range of +1 and -1 standard deviation from the mean expected score. It highlights out-of-range scores that are more than +1 standard deviation above the mean, or more than -1 standard deviation below the mean. We focused on results for *DICTION*'s master variables that were 'extremely out-of-range': that is, for which language use was statistically significant in two-tailed terms at the 5% level or better.

To overcome any averaging effects from analyzing a corpus of letters over time, we also explored the letters of each CEO on a year-by-year basis. We had no prior expectations

regarding likely results. Where strong common statistically significant results were found for any master variable, we investigated whether there were any significant common patterns in that master variable's component variables.

In Stage 2, we began by exploring whether our tentative conclusions in Stage 1 were indicative of hubris. Our maintained view was initially that the Stage 1 results should indicate language reflecting hubris. On this basis, we expected distinctly different verbal tone characteristics in Stage 2 in a validating sample of texts of (presumably) non-hubristic CEOs. These texts included a sample of letters to shareholders signed in respect of 2006 by CEOs of 77 Financial Times Stock Exchange [FTSE] 100 companies (approximately 136,000 words) and 91 of the top 100 companies in the annual FORTUNE 500 listing of America's largest corporations according to annual revenues (approximately 198,000 words). The pattern of results shown by *DICTION* for these 168 additional letters provides a broad benchmark of CEO language in annual report letters. We analyzed letters for 2006 because they were temporally towards the middle of the time interval during which the CEO letters studied in Stage 1 were published — and because they were readily accessible to the authors in text file format.

In Stage 2 we also analyzed four letters (approximately 5000 words) of a CEO with a strong reputation for humility (a common antonym for hubris), Haruka Nishimatsu of Japan Air Lines. Nishimatsu has attained international notoriety for humility and self-effacing behavior. A *Google* search using such terms 'CEO', 'humble' and related words led us quickly to Nishimatsu. (For an account of Nishimatsu's humility see a CNN television news report by Kyong Lah (2009) accessible on www.youtube.com/watch?v=Qj7ZHRYL28M, titled 'When was the last time you saw such a CEO?')

Further, we also included the letter to shareholders in 2005 (2742 words) of Rick Wagoner (CEO of General Motors). Craig and Amernic (2011, p. 565) concluded that this

letter ‘... reveal[s] language antithetical to the stereotypical axiomatically assumed narcissistic image of a CEO’ and possesses a pervading tone that:

... reflects an absence of a sense of grandiosity, self-importance, arrogance, or haughtiness [and is] self-effacing, self-critical, and apologetic ... [and] frank (and far from grand) in admitting to mistakes made; and to GM’s inadequate performance ... [Wagoner] does not fantasize about success and brilliance or seek admiration from others. ... [his letter] is neither exploitative, nor lacking in empathy.

(Craig and Amernic 2011, p.573).

Additional support for our inclusion of Wagoner’s letter was provided by the conclusion of Brennan and Conroy (2013, endnote 2, p. 191) that this letter did not show signs of hubris.

We processed the FORTUNE 500 and FTSE letter sets by calculating *DICTION* scores for each letter and then averaging the result. We did not process the corpus of letters in each of these letter sets as a single file. Each letter in these sets is signed by a different CEO. The advantage of this procedure is that it controls for situations in which a shorter letter that is high in say, REALISM, would count as much as a longer letter high in REALISM. If an average is obtained from processing the corpus of letters as one file, then longer letters are given more weight.

Results

Stage 1 Analysis

Table 1 shows that *DICTION*’s calculated variable, VARIETY, was out-of-range (high) in the corpus of letters for each of Browne, Goodwin and Murdoch. A similar out-of-range (high) score for VARIETY was reported for speeches of Browne and Murdoch by Craig and Amernic (2014). Hart and Carroll (2013, p. 5) describe this measure as ‘... conform[ing] to Wendell Johnson’s (1946) Type-Token Ratio which divides the number of different words in

a passage by the passage's total words. A high score indicates a speaker's avoidance of overstatement and a preference for precise, molecular statements.'

No calculated variables were statistically significant at the 5% level or better. There were five statistically significant language uses highlighted by *DICTION*'s master variables: two high out-of-range indicators of a tone of REALISM ($p < 0.01$ for Goodwin; and $p < 0.001$ for Browne); two for OPTIMISM ($p < 0.001$ for Browne; and $p < 0.05$ for Goodwin); and one for COMMONALITY ($p < 0.05$ for Browne). High scores for *DICTION*'s OPTIMISM master variable seem consistent with the expected role of the CEO of a large public company generally. It is the results for REALISM that we pursue further. The extremely high scores on this master variable seem inconsistent with hubris as constituting a 'loss of contact with reality'.

Table 1. Master variables and calculated variables in the corpus of letters of Browne, Goodwin and Murdoch

[Significance levels (two tailed): * = 5%; ** = 1%; *** = 0.1%]

	Normal Range		Browne	Goodwin	Murdoch
	Low (-1 s.d.)	High (+1 s.d.)			
Master Variables					
ACTIVITY	46.26	53.97	48.02	50.98	50.53
OPTIMISM	47.92	52.50	58.50***	55.39*	54.28
CERTAINTY	38.62	50.26	40.91	48.61	48.92
REALISM	41.14	46.85	52.87**	53.84***	49.19
COMMONALITY	47.94	55.30	42.51*	47.11	49.49
Calculated Variables					
INSISTENCE	111.40	341.91	11.48	42.63	38.01
EMBELLISHMENT	-0.69	2.60	1.21	0.99	0.75
VARIETY	0.29	0.52	0.70*	0.56	0.57
COMPLEXITY	4.71	5.42	4.68	5.18	4.90

To check for any masking of results arising from averaging effects in analyzing a corpus of letters, we explored the corpus on a letter-by-letter basis. Table 2 reveals statistically significant language use for Browne in terms of REALISM in all of his nine letters; for Goodwin in seven of his eight letters; and for Murdoch in one of his five letters. In contrast, OPTIMISM was considerably stronger in the Goodwin letters (significant in 6 of 8 years);

significant once in the Browne letters; and was not significant in any of Murdoch's letters (although above the upper bound of the normal range).

Table 2. Master variables in each of the letters of Browne, Goodwin and Murdoch

[Significance levels (two tailed): * = 5%; ** = 1%; *** = 0.1%]

	Activity			Optimism			Certainty			Realism			Commonality		
Year	B	G	M	B	G	M	B	G	M	B	G	M	B	G	M
1998	48.61			57.81***			48.89			59.27***			48.55		
1999	50.30			52.11			48.79			54.77***			50.07		
2000	50.54	51.61		54.34	54.45		50.75	49.39		54.70***	49.13		51.92	49.01	
2001	49.81	50.73		53.48	58.87***		50.68	48.54		55.17***	53.53***		47.70	49.74	
2002	50.29	48.90		52.24	52.51		48.84	47.44		55.87***	50.29*		49.31	47.39	
2003	48.72	49.10		54.86	58.77***		48.69	52.54		54.78***	55.81***		52.76	49.63	
2004	50.80	48.17		53.86	58.20***		45.80	48.28		53.94***	53.02**		48.75	46.25	
2005	49.90	50.24		53.59	57.38**		51.96	47.51		58.22***	53.97***		49.14	48.50	
2006	48.77	50.44		52.91	56.58**		44.83	51.83		52.32**	53.46***		49.34	51.25	
2007		50.88	52.17		55.26*	54.46		50.05	47.28		53.65***	49.30		48.02	51.21
2008			48.96			54.79			50.21			48.39			48.22
2009			49.63			54.59			47.96			51.55**			50.17
2010			52.41			54.19			48.90			49.38			50.08
2011			49.50			53.36			50.24			49.19			47.78

Based on the results reported in Tables 1 and 2, our tentative initial presumption was that hubris is likely to be indicated by a statistically significant high frequency of words included in the REALISM master variable. We note that REALISM is constructed from a word list reflecting ‘Language describing tangible, immediate, recognizable matters that affect people’s everyday lives.’ It comprises seven dictionary variables and one calculated variable (COMPLEXITY), according to the following formula (Hart and Carroll 2013, p.1):

[FAMILIARITY + SPATIAL AWARENESS + TEMPORAL AWARENESS + PRESENT CONCERN + HUMAN INTEREST + CONCRETENESS]

less

[PAST CONCERN + COMPLEXITY]

Broadly, REALISM is calculated as the sum of scores for six additive component variables less the sum of scores for two subtractive component variables, as explained in the following summary of Hart and Carroll (2013, p. 9). The additive variables comprise measures of

- ‘the most common words in the English language’ [FAMILIARITY];
- ‘terms referring to geographical entities, physical distances, and modes of measurement’ [SPATIAL AWARENESS];

- ‘terms that fix a person, idea, or event within a specific time-interval ... signaling a concern for concrete and practical matters’ [TEMPORAL AWARENESS];
- ‘a selective list of present-tense verbs which occur with great frequency’ [PRESENT CONCERN];
- terms that concentrate ‘on people and their activities [to give] discourse a life-like quality’ [HUMAN INTEREST]; and
- terms reflecting ‘tangibility and materiality’ [CONCRETENESS].

The subtractive variables comprise measures of

- ‘past-tense forms of the verbs contained in the Present Concern dictionary’ [PAST CONCERN]; and
- the average number of characters-per-word in a given input file [COMPLEXITY].

For fuller details of examples of specific words and word-types included in each component variable, see Appendix 2 and Hart and Carroll (2013, p. 9).

We explored each of these component variables (described in Appendix 2) to assess which of them had the strongest influence on the consistently significant results for REALISM. Table 3 shows that HUMAN INTEREST was consistently highly significant for the corpus of letters of each of Goodwin and Murdoch, but was not significant for the letters of Browne (despite being above the upper-bound of the normal range). Whereas Browne has significant high range scores for REALISM, none of the sub-component variable scores was significant.

Table 3. Component variables of the REALISM master variable in the corpus of letters of Browne, Goodwin and Murdoch

[Significance levels (two tailed): * = 5%; ** = 1%; *** = 0.1%]

REALISM	Normal Range		Browne	Goodwin	Murdoch
	Low (-1 s.d.)	High (+1 s.d.)			
Additive variables					
FAMILIARITY	106.54	137.49	107.12	111.53	115.12
SPATIAL AWARENESS	0.44	9.82	6.18	16.23*	11.04
TEMPORAL AWARENESS	5.81	20.69	7.53	8.24	16.05
PRESENT CONCERN	1.06	8.54	9.82	7.11	13.15*
HUMAN INTEREST	-4.99	12.10	19.42	34.40**	39.42***
CONCRETENESS	10.03	30.92	22.98	9.46	18.80
Subtractive variables					
PAST CONCERN	-0.88	3.85	1.79	1.54	2.06
COMPLEXITY	4.71	5.42	4.68	5.18	4.90

DICTION's HUMAN INTEREST dictionary variable is:

An adaptation of Rudolf Flesch's notion that concentrating on people and their activities gives discourse a life-like quality. Included are standard personal pronouns (he, his, ourselves, them), family members and relations (cousin, wife, grandchild, uncle), and generic terms (friend, baby, human, persons) (Hart and Carroll 2013, p. 9).

Flesch (1951) contends that some words (depending upon their context) are concrete, and other words are abstract. Any text that contains a significant proportion of Flesch's concrete words is deemed to be more definite and tangible than a text characterized by abstract words. Many of Flesch's concrete words refer to people and their activities — the basis of *DICTION*'s HUMAN INTEREST dictionary.

Stage 2 Analysis

Here we report on our initial attempts to cross-validate our tentative (and surprising) conclusion that extremely high *DICTION* scores for the master variable, REALISM, and the dictionary variable, HUMAN INTEREST, are good diagnostic markers of the language of a hubristic CEO. If the allegedly hubristic CEOs Browne, Goodwin, and Murdoch scored high

in REALISM (in Stage 1), then an *absence* of such a result in the broader Stage 2 sample of supposed non-hubristic CEOs would suggest that the high REALISM score could indeed be a marker of hubris, and thereby stimulate a search for theoretical explanations. However, as we show below, such was not the case: REALISM was found to be a distinctive marker also in the Stage 2 results.

Table 4 presents the results for master variables and calculated variables in the sampled text of Wagoner (General Motors), Nishimatsu (Japan Air Lines), and the CEO letters of Fortune 500 CEOs and FTSE 100 CEOs for 2006.

Table 4. Master variables and calculated variables for Wagoner, Nishimatsu, Fortune 500 CEOs and FTSE 100 CEOs

[Significance levels (two tailed): * = 5%; ** = 1%; *** = 0.1%]

	Normal Range		Wagoner	Nishimatsu	Fortune 500	FTSE 100
	Low (-1 s.d.)	High (+1 s.d.)				
Master Variables						
ACTIVITY	46.26	53.97	50.94	49.63	49.12	49.24
OPTIMISM	47.92	52.50	56.30**	54.98	56.54**	56.12**
CERTAINTY	38.62	50.26	49.19	50.07	47.17	47.93
REALISM	41.14	46.85	56.05***	59.56***	54.84***	54.38***
COMMONALITY	47.94	55.30	48.81	50.08	49.08	49.13
Calculated Variables						
INSISTENCE	111.40	341.91	34.46	52.62	53.21	52.14
EMBELLISHMENT	-0.69	2.60	0.88	0.33	0.94	1.96
VARIETY	0.29	0.52	0.57	0.56	0.57	0.57
COMPLEXITY	4.71	5.42	4.96	4.81	5.10	5.07

Although the VARIETY scores for Wagoner, Nishimatsu and FTSE 100 were out-of-range (high), none of the calculated variables was statistically significant. REALISM was statistically significant in each letter set examined, mirroring results reported in Table 1 for Browne and Goodwin. Thus, the validation we were seeking initially was not evident. As anticipated, OPTIMISM scores were also out-of-range (high). Other than for the Nishimatsu letter set, they were statistically significant at the 5% level. As mentioned above, we did not explore this anticipated result since OPTIMISM seems to be a genre effect of large company language leadership.

When we explored the component variables comprising REALISM (see Table 5), HUMAN INTEREST was the strongest component variable of influence, consistent with our Stage 1 analysis. The results for the Nishimatsu letter set reveal statistical significance at the 5% level for FAMILIARITY, SPATIAL AWARENESS, PRESENT CONCERN and HUMAN INTEREST.

Table 5. Component variables of the *REALISM* master variable for Wagoner, Nishimatsu, Fortune 500 CEOs and FTSE 100 CEOs

[Significance levels (two tailed): * = 5%; ** = 1%; *** = 0.1%]

REALISM	Normal Range		Wagoner	Nishimatsu	Fortune 500	FTSE 100
	Low (-1 s.d.)	High (+1 s.d.)				
Additive variables						
FAMILIARITY	106.54	137.49	114.42	157.53*	109.89	118.98
SPATIAL AWARENESS	0.44	9.82	8.52	24.83***	8.41	9.43
TEMPORAL AWARENESS	5.81	20.69	16.26	6.47	14.16	14.72
PRESENT CONCERN	1.06	8.54	12.56*	14.99**	10.43	8.32
HUMAN INTEREST	-4.99	12.10	36.13**	20.70*	36.02**	32.43**
CONCRETENESS	10.03	30.92	14.37	15.01	17.00	14.17
Subtractive variables						
PAST CONCERN	-0.88	3.85	1.91	3.73	1.81	2.08
COMPLEXITY	4.71	5.42	4.96	4.81	5.10	5.07

There seem to be two polarized explanations for the highly significant results for REALISM. The first is that a generic feature of annual report letter language used by CEOs of major companies is high statistical significance in terms of *DICTION*'s master variable REALISM. The second is that CEOs of major companies are universally hubristic, and that high scores for REALISM are a marker of their language. The first explanation seems more plausible. We accept it tentatively, subject to further validation.

Discussion and Conclusions

Our endeavor to ascertain *DICTION*-generated signs of hubristic language in CEO letters to shareholders led us to an interim conclusion that the master variable, REALISM, and its component dictionary variable, HUMAN INTEREST, were markers of hubris. However, we were unable to cross-validate this conclusion by analyzing a benchmark holdout sample of letters of CEOs of FTSE 100 and FORTUNE 500 companies, and two individual CEOs (Wagoner and Nishimatsu). Contrary to expectations, *DICTION*'s REALISM and HUMAN INTEREST variables were also statistically significant in the holdout sample.

Thus, we found no distinctly different pattern of results for allegedly hubristic CEOs. The emerging picture of the relationship between CEO language and hubris is more complex and challenging than we initially thought. Browne, Goodwin and Murdoch apparently dealt quite well with the semantic tone demands of the CEO letter genre, even though they (purportedly) exhibited signs of CEO-hubris when their CEO letters were examined using qualitative approaches. The *DICTION* pattern observed appears to say more about CEO letters as a genre than it does about the potential hubristic language of the CEOs who signed them.

These results should prompt reconsideration of whether apparently hubristic CEOs deserve more credit for their language use than many of us have (rightly or wrongly) accorded them in the past. Perhaps, like others, we have been too eager to accept the premise that hubristic CEOs are inadvertent and reflexive users of uncontrolled and pathologically-generated hubris in their utterances and written language. We are now more amenable to accepting that CEOs of major companies are more self-aware and controlled than we thought. This seems especially to be the case when they engage in staged discourse opportunities, such as in a written CEO letter. There is a strong likelihood that the public relations ‘mind-ers’ of CEOs intentionally moderate (or even strive to eliminate) hubristic language use by CEOs, possibly as part of an impression management strategy. If so, then the distinctive *DICTION* results reported should be conceived as typical of *CEO-speak* within the large-firm CEO annual report letter — that is, as a genre effect.

The strong high range results for *REALISM* hold consistently in sampled letters across industry sectors (manufacturing and non-manufacturing); and industry types (banking, oil, media, transport, diversified conglomerate). This dilutes the possibility of an industry effect. Our results hold for sampled firms headquartered variously in the UK, USA, Japan and Continental Europe.

An explanation for the high REALISM scores observed lies in the close similarity of purpose between political leaders (such as US presidents) and CEOs of major companies. Both types of leader enact leadership substantially through language. Their respective discourses have many similarities:

CEOs are engaged in a communicative process, just like US Presidents. Both are involved in ‘crafting appeals to a targeted public’ (Hart and Childers 2005, p. 180): that is, to the populace or the electorate or special interest groups (in the case of Presidents); and to the general community or stockholders and other stakeholders (in the case of CEOs) (Craig and Amernic 2014, pp. 73-74).

Mindful of these similarities, it is instructive to note that Hart et al. (2013) have reported consistently high range scores for REALISM in the discourse of elected politicians, especially US presidents. Thus, it is unsurprising that CEOs of major corporations have uniformly high range scores for REALISM in their CEO letters. CEOs are confronted regularly with the task of communicating abstract intangible concepts such as performance, wealth, accountability and stewardship to stakeholders in a way that is comprehensible, meaningful, and (most of all) tangible. To do so, they have to master the language of tangibility: that is, REALISM.

We draw on Hart et al.’s (2013) reasoning in respect of US politicians to explain high REALISM in CEO letters: it displays the tendency for CEOs of major companies to look for ways of representing an abstract concept by means of a tangible example, so that they can tap into shareholders’ felt needs (Hart et al. 2013, p. 46; www.thefreedictionary.com/instantiated). We explain our unexpected *DICTION* results as reflecting a desire by CEOs to avoid ‘theoriz[ing] about events with little regard to tangible matters’ (Hart et al. 2013, p. 50). As with politicians, they ‘use high levels of REALISM to keep themselves grounded’ (p. 52). This suggests that language reflecting high REALISM

reveals that CEOs are cognizant of ‘how powerful they are and how what they do, how they act, and what they say and write, affects human affairs’ (Hart et al. 2013, p. 57).

Since the high range scores for REALISM are associated with high range scores for the HUMAN INTEREST dictionary variable (and this variable captures Flesch’s [1951] focus on more concrete words), Carey’s (1997, p. 12) interpretation based on the notion of corporate *propaganda* seems plausible too:

...the successful use of propaganda as a means of social control requires ... the will to use it; the skills to produce propaganda; the means of dissemination; and the use of ‘significant symbols’, symbols with real power over emotional reactions...

The CEO’s letter fulfills all of Carey’s conditions, especially its alliance with audited financial statements in corporate annual reports. Thus, the CEO letter is a potent medium of corporate expression.

Our finding that *DICTION*’s HUMAN INTEREST dictionary variable scores are significantly high, on average, in letters of CEOs of large companies is instructive. First, it suggests that the ‘means of social control’ arising from the use of concrete words (Flesch, 1951) centering on people and their activities (Hart and Carroll 2013), is well-deployed in CEO letters. Such deployment occurs irrespective of whether a particular CEO exhibits excessive hubris. Second, it alerts us to the possibility that CEOs use words inconsistently with the interpretations placed on such use by *DICTION*’s master variables, dictionary variables, and calculated variables. The HUMAN INTEREST dictionary, which is meant to ‘concentrat[e] on people and their activities...’ is a case in point. Here is a 65 word example from Murdoch’s CEO letter in 2010:

When you have been in business as long as we have, you are no stranger to adversity or to instability. We hedge against uncertainty in diversified assets at all stages of growth. So as we strengthen our existing businesses, we are developing the next generation, like STAR India and new digital content models. Finally, we enjoy the flexibility that comes from a well-managed balance sheet.

The underlined words are included in the HUMAN INTEREST dictionary. However, note that Murdoch uses the word ‘you’ in a sort of egocentric, abstract sense — and not to refer to ‘specific others’ at all.

DICTION’s capture of a strong linguistic tone of REALISM (and HUMAN INTEREST) in the letters of CEOs of large companies is an important (if unanticipated) finding. It can be explained in terms of abstract versus concrete text (Flesch 1951), realistic political tone (Hart *et al.* 2013), and political propaganda (Carey 1997). With such explanations in mind, there is a plausible case that the specific words in a CEO letter are likely to contribute to a discourse of corporate social control³ and that the letters of CEOs of large companies should be viewed as propaganda. This is despite their targeting, in a seemingly-natural and logical way, on the things that purportedly matter most to corporate stakeholders — people and their activities.

Future research would be well-directed if it conceived the CEO letter as providing a ‘personal public stage’ on which the CEO crafts a narrative ‘explaining and justifying’ his official, audited financial results. Thus, the signals provided by hubristic language in the CEO letter should be interpreted in the context of what this stage is likely to reveal. For example, do they differ depending on whether reported earnings per share are ‘good’, ‘great’, ‘barely meets analysts’ expectations’, or ‘poor’? Such argument is redolent of impression management explanations, but with a twist. The CEO letter does not merely attribute good financial results to the CEO and poor results elsewhere. We should acknowledge the

³ The effect of mechanisms for combatting corporate power should not be ignored. These include public relations campaigns by labor unions and environmental activists; and the moderating effect of ‘family beliefs and community culture’ (Miller 1997, p.2).

likelihood that language choice is a mechanism by which the CEO letter can be infused with signs of hubris. The strength of such signs is likely to be conditional upon the results reported in financial statements. Craig and Amernic (2014) have suggested a range of additional future research possibilities. These include delineating the hubris construct more sharply and therefore refining theoretical linkages with language; considering ‘micro-bursts’ of CEO hubris language [lobbying, mergers, takeovers, corporate distress]; testing whether CEO hubris increases with tenure in office; and exploring how to best use *DICTION* as a complement to close reading.

A high priority area for future research enquiry should be to assess whether hubristic language is more likely to occur when hubristic CEOs speak extemporaneously, rather than when they deliver a prepared speech or craft a CEO letter. Transcripts of earnings calls (especially when a CEO responds to a hostile question), and transcripts of impromptu interviews of CEOs, would be particularly fertile sources. Additionally, attention should be directed to disentangling the work of advisors in sanitizing the hubristic extremes in prepared scripts. Further research should be more attuned to, and be more knowledgeable about, the likelihood that letters and speeches of CEOs are often the end product of a long socially-constructed process in which corporate public relations departments are involved heavily. While CEO’s speeches and letters undoubtedly bear the final imprimatur and endorsement of CEOs, we need to better assess the extent to which we can draw inferences from them about the immediate mindsets of CEOs.

Appendix 1

Some key general features of *DICTION* software

[Source: Murphy 2013, pp. 60-61, with some minor editing]

The program deploys 10,000 search words divided into 31 word lists ... or dictionaries, compiled after the analysis of 20,000 texts of several different types. They contain individual words, not phrases. None of which are present in more than one dictionary. Homographs undergo statistical weighting procedures intended to correct for context.

The program's main strength is that it analyses texts on the basis of five master variables: activity, optimism, certainty, realism and commonality. These are 'created by combining (after standardization) the subaltern variables' (Hart 2001: 45). They mostly represent semantic fields, such as praise, satisfaction, inspiration, blame, hardship, denial. Four of the variables included in the master variable calculations do not represent semantic fields: insistence (the degree to which a text relies on the repetition of lexical words), embellishment (ratio of descriptive to functional words), variety (type-token ratio) and complexity (word length).

According to Hart (2001: 43), the master variables, chosen deliberately, are the five elements that 'provide the most robust understanding' of a text. They are broadly defined as follows:

ACTIVITY: language featuring movement, change, the implementation of ideas and the avoidance of inertia.

CERTAINTY: language indicating resoluteness, inflexibility, and completeness and a tendency to speak ex cathedra.

OPTIMISM: language endorsing some person, group, concept or event or highlighting their positive entailments.

REALISM: language describing tangible, immediate, recognizable matters that affect people's everyday lives.

COMMONALITY: language highlighting the agreed-upon values of a group and rejecting idiosyncratic modes of engagement.

... virtually no statistical relationship exists among the five variables, which means that each cluster sheds new and different light on the passage being examined' (Hart 2001: 45).

...

DICTION calculates frequency scores for each variable and rates them as being within, above or below a normal range. This range is calculated on a text type which the researcher chooses as comparable to the one under analysis. There are six broad classes of text types: Business, Daily Life, Entertainment, Journalism, Literature, Politics and Scholarship. These classes are further subdivided into thirty-six individual text types, representing both speech and writing. These texts are not incorporated in the software; only the calculations for each variable in these texts are included in DICTION.

...

Although the initial impression may be one of rigidity, DICTION offers some user-controlled features. The program standardizes scores either on 500-word units, ignoring the remaining part of the text, or by segmenting the text into 500- word units and averaging the scores for each unit. ...

Appendix 2

Component variables of the REALISM master variable

[Source: Hart and Carroll (2013)]

FAMILIARITY: Consists of a selected number of C.K. Ogden's (1968) operation words which he calculates to be the most common words in the English language. Included are common prepositions (across, over, through), demonstrative pronouns (this, that) and interrogative pronouns (who, what), and a variety of particles, conjunctions and connectives (a, for, so).

SPATIAL AWARENESS: Terms referring to geographical entities, physical distances, and modes of measurement. Included are general geographical terms (abroad, elbow-room, locale, outdoors) as well as specific ones (Ceylon, Kuwait, Poland). Also included are politically defined locations (county, fatherland, municipality, ward), points on the compass (east, southwest) and the globe (latitude, coastal, border, snowbelt), as well as terms of scale (kilometer, map, spacious), quality (vacant, out-of-the-way, disoriented) and change (pilgrimage, migrated, frontier.)

TEMPORAL AWARENESS: Terms that fix a person, idea, or event within a specific time-interval, thereby signaling a concern for concrete and practical matters. The dictionary designates literal time (century, instant, mid-morning) as well as metaphorical designations (lingering, seniority, nowadays). Also included are calendrical terms (autumn, year-round, weekend), elliptical terms (spontaneously, postpone, transitional), and judgmental terms (premature, obsolete, punctual).

PRESENT CONCERN: A selective list of present-tense verbs extrapolated from C. K. Ogden's list of general and picturable terms, all of which occur with great frequency in standard American English. The dictionary is not topic-specific but points instead to general physical activity (cough, taste, sing, take), social operations (canvass, touch, govern, meet), and task-performance (make, cook, print, paint).

HUMAN INTEREST: An adaptation of Rudolf Flesch's notion that concentrating on people and their activities gives discourse a life-like quality. Included are standard personal pronouns (he, his, ourselves, them), family members and relations (cousin, wife, grandchild, uncle), and generic terms (friend, baby, human, persons).

CONCRETENESS: A large dictionary possessing no thematic unity other than tangibility and materiality. Included are sociological units (peasants, African-Americans, Catholics), occupational groups (carpenter, manufacturer, policewoman), and political alignments (Communists, congressman, Europeans). Also incorporated are physical structures (courthouse, temple, store), forms of diversion (television, football, CD-ROM), terms of accountancy (mortgage, wages, finances), and modes of transportation (airplane, ship, bicycle). In addition, the dictionary includes body parts (stomach, eyes, lips), articles of clothing (slacks, pants, shirt), household animals (cat, insects, horse) and foodstuffs (wine, grain, sugar), and general elements of nature (oil, silk, sand).

PAST CONCERN: The past-tense forms of the verbs contained in the Present Concern dictionary.

COMPLEXITY: A simple measure of the average number of characters-per-word in a given input file. Borrows Rudolf Flesch's (1951) notion that convoluted phrasings make a text's ideas abstract and its implications unclear. (p.8).

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