

Fear in the West: A sentiment analysis using a computer-readable “Fear Index”

Robert Hogenraad

Université catholique de Louvain, Louvain-la-Neuve, Belgium

Robert Hogenraad, Emeritus, Institute of Psychological Sciences, Université catholique de Louvain, Place du Cardinal Mercier 10, Louvain-la-Neuve, Belgium. E-mail: robert.hogenraad@uclouvain.be <https://orcid.org/0000-0002-2032-6652>

Abstract

We tune in on fear to make it visible and detect its drifts. We collect verbal signals of coming fear burrowed in the crackles of political and other speeches by leading figures: Familiar words people use to express fear. From the EmoLex database (Mohammad and Turney 2013), we develop a computer-readable “Fear Index” to chase fear in the West. We aim a view from above to see how fear has changed, or hasn’t. We first look how valid is the “Fear Index” on texts (fearful novels and historical documents) expected to display specific profiles of fear. Then trace the trend fear follows in speeches of European leaders. The “Fear Index” decreases in the speeches and documents of European political and economic spheres (President Donald Tusk –European Council--, President Mario Draghi –European Central Bank--, and the Global Trade Alert agency). The “Fear Index” spirals upwards among humanitarian leaders (Pope Francis, the Archbishop Justin Welby, and the International Committee of the Red Cross). We record no significant change in the trend of the “Fear Index” in the speeches of President Vladimir Putin. Humanitarian and political leaders changing in counterpoint prompt questions about empathy, or lack of that, in a now bipolar West.

Keywords

sentiment analysis; fear index; computer-readable dictionaries; Western history of now; computer-aided content analysis

Fear in the West: A sentiment analysis using a computer-readable “Fear Index”

1 Introduction

“But the generals just galloped on, caught up in the panic, and such a storm of stupefaction blew up, carrying off both conquered and conquerors, that at one point the two armies lost each other in this fumbling pursuit in broad daylight, with MacMahon making for Lunéville, while the Crown Prince of Russia was looking for him near the Vosges.(...) At Sarrebourg, on the 8th, the 5th Corps ran straight into the 1st like one runaway torrent meeting another, in full flight, defeated without a battle, dragging its poor commander –General de Failly— down with it. He was almost out of his wits with despair” (Zola 2017, p. 60).

Zola had no theory of fear, just words *gallop*, *storm*, *stupefaction*, *flight*, *despair*, to reflect fear, words one can touch. We do the same here, methodically. We adapt a calibrated list of familiar words of fear from a subset of the EmoLex database (Mohammad and Turney 2013) into a “Fear Index” (Table 1), aware that some emotions are never to find their words. We then collate control texts known to present specific profiles about fear. This collection of control texts allows of corroborating how valid is the “Fear Index”. The latter, we apply to our final target texts of European leaders, political, financial and humanitarian. We want to address the kinetics of fear in the West over the last five to seven years. They say that when the snake sheds its skin, it goes blind and deaf. Does the West become blind and deaf to fear? Surrealist René Magritte painted “The Companions of Fear” ¹ in 1942 while the German

¹ In appreciation to Maria and Dean McKenzie (September 2017) for signaling the Magritte’s 1942 painting “The Companions of Fear” in the Brussels Museum of Modern Art (<https://theartstack.com/artist/rene-magritte/the-companions-of-fear>).

armies occupied most of Europe. Birds, owl --Satan's bird, writes Delumeau (1978, p. 236) --, grouse, and raven are the companions. Today's companions of fear are anger, anticipation, disgust, sadness, surprise. And because words are part of our world, "*words are also deeds*" (Stern's title of his chapter 3, 1992, pp. 44-60).

It's a fair bet no modern essayist would now start a story in Stefan Zweig's (1963, pp. 23-24) way: "*If I try to find some useful phrase to sum up the time of my childhood and youth before the First World War, I hope I can put it most succinctly by calling it the Golden Age of Security. (...) Everything in this wide domain was firmly established, immovably in its place... (...) Anything radical or violent seems impossible in such an age of reason*". For a divergent view, we turn to the "Threat Index" of McCann and Stewin (1990), McCann (1998), and Hogenraad and Grobois (1997). Historians experts in modern history evaluated on a 7-point scale the degree of social, economic, or political threat for each of the years 1920-1986 of the US history (later extended to 1788-1992, McCann 1998). Hogenraad and Grobois (1997) ran a similar analysis for the years 1920-1993 of the European history². The relevant feature of the latter European study is the increasing levels of threat that characterized the period 1981-1993, to a speed of growth similar to that of the period 1920-1928. de Montbrial's analyses (2017, 2018 forthcoming) are also about the roller-coaster changes (Kershaw 2018) (technological, economic, political, military) that now make the West difficult to understand. We know what came after Zweig's "Age of Security". We know also what the "Threat Index" and its variants revealed (Chung and Pennebaker 2011; Hogenraad 2005; Fenstermacher and Kuznar 2016). Knowing levels of threat signals (intents), say unemployment or GNP, does not allow economic or political leaders of recognizing the sentiment these signals breed.

² GNP, car registrations, balance of trade, bankruptcies, unemployment, and suicides are among indicators showing highest correlations with the European "Threat Index".

Addressing the state of fear in the West seems fitting at this moment of rapid changes. But it takes a another way to do it (more later).

1.1 “Living in dangerous times”³

To have seen and let see what should not be seen is the driver and only wrong of analyzing markers of fear. “*Wounds of the soul do not heal as those of the body*”, writes Lawrence (1946, p. 43). Fear is such a wound. The turnout of analyzing markers of fear blends nagging questions shaking our certainties. Shifting rates of fear averts leaving these hazards to chance. Our aim is letting fear surface from under the crackles of mealy-mouthed security speeches. Fear of terrorist actions, Islamic or other, occupies our minds. So do other turbulences, technology, cybercrime, ‘elite Web People’ versus ‘thwarted Wall People’ (Friedman 2016), inequality of wealth (Kohler and Smith 2018; Milanovic 2016; Rajan 2010), risks of wars (Friedman 2009⁴), corruption, populisms (Freedom House 2017; Macmillan 2017; Müller 2016). But threatening of penalties citizens trying to avoid legally a new slackly worded fiscal law cause fear too, call it –*shuddering to think of*-- fiscal terror: ‘*Times of distress*’ writes Hölderlin (1998 p. 151) in the poem ‘*Bread and Wine*’. Witch-hunt was common in the 15th century (Delumeau 1978, pp. 44-46, 150-152; Hutton 2017). Still nowadays as persecution of the unpopular. We address all fears here, media hypes and humble. Fear is part of the great human themes with “love, lust, work, romantic muddle,

³ Reference to Kevin Nance (2012) interviewing Don DeLillo for the Chicago Tribune: “*I think my work is influenced by the fact that we’re living in dangerous times*”. Nance, K.: Living in dangerous times. Chicago Tribune, pp. 1-3. (12 October 2012). <http://www.chicagotribune.com/lifestyles/books/ct-prj-1014-don-delillo-20121012-story.html>. <https://perma.cc/VD24-ZRC7>. Accessed 18 November 2017.

⁴ Friedman’s (2009) “The Next 100 Years: A Forecast for the 21st Century” repeatedly makes fear connect with conflicts to come. But connecting facts does not create a logical relation as one needs to distinguish the core from the part. The closer you come to the center of things, the more difficult to explain them.

ageing, ambition, grief and other forces that bless and bedevil most novels (and lives)” (Campbell 2010, p. 3). In brief, our frame of reference ⁵ concerns “*words people use*” (Boyd and Pennebaker 2017, p. 64) to express fear. People don't have a theory of emotions. What they have are words, of fear in this case, they use to voice their preoccupations. The “Fear Index” reproduces people's concerns compressed without losing the flow of time.

What we do here, to clarify and use the right language, does not concern the state-of-the-art about fear, but the state of fear. One can read fear on several levels simultaneously rather than getting to it in a cut-and-paste way. For other views of fear, we can turn to Bargh (2017), McClelland (1987), Delumeau (1978, 1990), or Braudel (1996), he of the “*longue durée*”. Right is Bargh's (2017 p. 37) notice that one “*can make liberals more conservative by threatening them and making them somewhat afraid*”. But it fell to historian Braudel (‘the long-term’ of the French Annales School) (1996, p. 820 in section “Jews and the general economic situation”, pp. 820-23) to write as of 1949:

If a chronological table were drawn up of the persecutions, massacres, expulsions and forced conversions which make the martyrology of Jewish history, a correlation would be discernible between changes in the immediate economic situation and the savagery of anti-Jewish measures. Persecution was always determined by, and accompanied, a worsening in the economic climate.

McClelland' “Avoidance Motives” (1987, pp. 373-412) too conjure fear through the need for security, that is, avoiding fear. Note that motive is a reason for acting, it is not the act (Burke 1969, pp. 64-69, ‘Act as locus of motives’). So does the volatility index VIX

(<https://finance.yahoo.com>) of the Chicago Board Options Exchange (CBOE), sometimes dubbed “the fear index”, a misnomer as the volatility index merely sends warnings of possible

⁵ “*No world without words*” (Goodman 1978, p. 6). But also “*to stress all syllables is to stress none, so to take all classes as relevant kinds is to take none as such*” (ditto, p. 11).

financial turbulences ahead. Bargh, Braudel, McClelland, the VIX, bond over the seeds of fear. The secret insecurities of fear do make it different from threat. Threat being over, fear may subside or return weeks, months or years later, after the storm (more anon).

2 Method: Corpora, dictionary, and text analysis

We pieced together a body of 18 corpora (Tables 2 and 3), fiction and history-of-now, introducing us to a wide cast of characters. Then work them over with the “Fear Index” (Table 1) using the PROTAN system of computer-aided text analysis (Hogenraad et al. 2003).

2.1 Corpora

We run the stress tests on the 11 corpora, each containing a legacy of fear words strung out across the texts (Table 2 and Appendix 1). From these tests, we expect to evince a specific trend (at least linear). Then turn to the seven corpora of Table 3 and Appendix 2 where we uncover if and how much fear progresses in the West. We run a ‘history-of-now’ here, to borrow the subtitle of Burleigh’s (2017) “The Best Times, the Worst Times: A History of Now” on how to overcome the problem of the ‘instant’ history of a moving target. One may always suspect such texts gained some edits to the safety of the plans of their promoters. Given expert knowledge of one’s native language, it must be possible to edit one’s speech or writing, or tell to that effect, to strengthen or weaken one’s emotions. In real life, events are often unforeseen, but reporting them can also go through selecting, suppressing or revising. It is more risky to explore what drives nonfiction political documents than literary ones. For what is predictable may not happen, because much can go wrong. Having no dog in this fight, both intuitively and from reports (Moïsi 2010; Shklar 1989; Siegel 2016), we expect fear to increase ostensibly in the West.

Contrary to the VIXALL-4 program in Harris' novel "The Fear Index" (2011, pp. 111-113), computer programs equipped with dictionaries for analyzing texts do not act on other computers around to cause planes to crash because of VIXALL-4's predicted market algorithms. Analyzing a text only mimics what an attentive but oriented reader unconcerned with exhaustion would do. No one can read and retain a million-words text in seconds, computers can. Thinking of the etymology of the Arabic word for "poet", "Sha'ir" (one who knows things hidden to others) (Davies 2017; <https://www.britannica.com/art/shair>), it comes to mind analyzing texts with the help of a computer does just that. In this sense, text analysis programs are machines for slowing down a text by letting new meanings to emerge while the text itself remains untouched.

Insert Table 1 about here

2.2 Dictionary: The "Fear Index", A library of lost fears and computer-aided content analysis

Details of the built-out of the "Fear Index" and its arrangement: A library of words fraught with fear. We use this library to comb texts for fear words they contain and collate their instances. *EmoLex* is Mohammad and Turney (2013) word-emotion dictionary⁶: The dictionary rests on a principle of association. "*Asking if a term is associated with an emotion leads to higher inter-annotator agreement than that obtained by asking if a term evokes an emotion*" (Mohammad and Turney 2013, p. 436). Plutchik's (1994) eight basic emotions (joy, sadness, anger, fear, disgust, surprise, trust, and anticipation) are the associating terms in

⁶ The authors of *EmoLex* are happy to hear about uses made of their lexicon (see "Terms of use" in <http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>).

EmoLex. Another principle is the authors rest on “the crowd” rather on the usual “students filling in questionnaires” to collate a word-emotion dictionary. The first step consists of collating emotion words from existing databases. Databases selected are: the WordNet Affect Lexicon (Strapparava and Valitutti 2004), the General Inquirer (Stone et al. 1966), and the Macquarie Thesaurus (Bernard 2000) combined with the Google Ngram corpus (Brants and Franz 2006). The second step involves an online crowdsourcing platform, Amazon’s Mechanical Turk (<https://www.mturk.com/mturk/welcome>): Presenting parts of the dictionary to thousands of people –on the tacit reasoning that ‘the crowd is right’--, after tests and security proofs, to note on Plutchik’s basic emotions (not on meaning but on association with any of the basic emotions). Thus, in one of the *EmoLex* versions, the number of terms after security checks amounts to 8,883 (Mohammad and Turney 2013, p. 448, Table 2). The current 2010 0.92 version of *EmoLex* (<http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>) makes 5,645 English entries. Google translate versions of *EmoLex* are available for other languages (see [NRC Emotion Lexicon in other languages](#)). Haselmayer and Jenny (2017) developed a German version of their own “Political Sentiment Dictionary” collating sentiment scores through crowdsourcing (<https://homepage.univie.ac.at/martin.haselmayer/>).

Among the challenges of sentiment analysis dictionaries (Cambria et al. 2017) is to remain aware (Mohammad and Turney 2013, p. 438, 2: Applications; Mohammad 2017) that one can use dictionaries to lead unaware readers to specific emotions or away from other ones, whatever fits preordained plans. This challenge questions only the use made of sentiment analysis. Truth is, it has always been possible to use text analysis, computer-aided or not, for suspicious reasons.

A general dictionary? Péladeau (2018) puts forth that an ‘out-of-the-box’ sentiment analysis tool working across domains does not yet exist. An example of a domain-specific dictionary is the “Financial Sentiment Analysis” (Loughran and McDonald 2011), accessible

in Péladeau's WordStat format. Haselmayer and Jenny (2017) present their tool for political communication in German. So did Soroka and Young (2012) for the English language. The flexibility in changing settings of a general-purpose "Fear Index" grounds applying it to databases as different as papal speeches, financial speeches, or Frankenstein fearful story among similar ones. In each case, fright is fright, in the Paris' terrorist attacks on November 13, 2015, in the Brussels' attacks on March 22, 2016, or on the Stock Market crash of September 29, 2008. After all, to keep the example of the "Financial Sentiment Analysis", capitalism has its roots in Calvin's Protestantism (Ghosh 2014, p. 289 on Protestantism as the "*sacralized version of Adam Smith's invisible hand*"; Weber 2011). And, to stay with finance, religious documents may have more in common with financial ones than we think. When Calvin married spirituality and prosperity, he opposed the secular position of the Church, as Barbara Tuchman (1978, p. 37) reminds us: "*Homo mercator vix aut numquam potest Deo placere*" ["A man who is a merchant can seldom if ever please God"]. To be fair, a way of smoothing away differing opinions (Haselmayer and Jenny 2017, p. 2626) would be to accept that domain-specific dictionaries may cohabit with general-purpose ones. Thus, if threats are domain-specific, say unemployment, politics or terrorism, common words of fear could fit different domains. When pudding came to proof, the "Fear Index", applied as is to fields as different as literature, politics, religion, and finance, led to tried-and-true results (more later).

Our focus was to see fear as a social experience. Fear and confusion feed each other (Jameson 2002, p. ix), fetter decisions, and increase the risk of violence. Beside threat signals, identifying verbal signals of fear lets decision makers and social analysts (historians,

sociologists, economists ⁷, intelligence agencies ⁸, social workers and communicators) to find further meaning in documents and speeches without imposing their own readings on them. In short, help guiding a West in need of a compass. Finally, we wonder if and how fear signals could be useful to detect manipulative messages? Could one imagine—even speculate—that communications meant to manipulate opinion might rein in more fear words (than non-manipulated communications), in a way the “Fear Index” could tag? Worth to put to the test.

Last challenge, translated versions of emotion-dictionaries are in demand. Many official documents are now available in several languages on the Web. Most of the history-of now corpora of this study are available in several languages. One could use translations of the “Fear Index” and revise its weak points. Then compare, say French and English versions of the “Fear Index” on French and English versions of the political, economic, or other speeches.

From *EmoLex*, we pressed into service the 1,483 items associated with fear to build up the “Fear Index”. Table 1 lists version 1.0 (12 January 2018) of the “Fear Index”, archived at <https://archive.org/details/aeSENTdlc> and <http://perma.cc/KH9B-BTW2>. Although the procedure to build *EmoLex* guarantees an internal support of the dictionary, we retested it against novels and reports of fearful events (see 3.1 A valid “Fear Index” and Table 2). Using

⁷ The Dutch tulipmania (1630s) (<https://www.investopedia.com/features/crashes/crashes2.asp>) that saw people sell their belongings for tulip bulbs ... until the market crashed and sellers panicked (Pavord 1999). For recent examples, consider market bubbles, shadow banking, abyssal debts of nations, Lehman Brothers, subprimes, or “a tweet too much”.

⁸ Russian Chief of the General Staff Valery Gerasimov: “*The role of nonmilitary means of achieving political and strategic goals has grown and, in many cases, have exceeded the power of force of weapons in their effectiveness. (...) The focus of applied methods of conflict has altered in the direction of the broad use of political, economic, informational, humanitarian and other nonmilitary measures*”. Gerasimov, V.: Tsennost Nauki v Predvidenniye [The value of science in prediction] Voenno-promyshlenni Kurier, 2013 February. (Translation at <https://inmoscowsshadows.wordpress.com/2014/07/06/the-gerasimov-doctrine-and-russian-non-linear-war/> by Rob Coalson).

the PROTAN program (<https://archive.org/details/PROTANUsersManual> and https://archive.org/details/presentation_201711), we worked dictionary categories over texts words and classified them. (PROTAN and similar tools only mirror what an attentive but oriented reader would do, exhaustion aside). A score is the square root of a ratio of the tagged words to the number of words by unit. That is, a score is the number of times a dictionary category hits a text word regardless of repetition. One then follows the course of the fear scores over time (statistical regressions on the fear scores using Simstat) (Péladeau 1996).

Text, literary or political, are datable events unrepeatable by definition. The heart of the problem is that one cannot analyze sampling error when there is only one text, for there is no distribution theory to turn to. The matter is that of the true value of a single statistical test: Repeating a scientific result to make it credible is more important than the result in itself (Cohen 1994; Goodman 1978, p. 139; Shapin 1996, p. 107). *“'Reproduction' has always and forever been the only way in which human beings have been able to acknowledge reality and to talk about it”* (Poirier 1999, p. 119).

The alternative is to simulate observations we don't have using those we have. Using the “bootstrap” computer-intensive statistical method (Péladeau 1996; Shalizi 2010), resampling evaluates how stable is an estimator across sampling variations. Bootstrapping consists of treating the data as if they were the population, and recreate thousands of samples from it by sampling with replacement (Hogenraad and McKenzie 1999). One calculates the estimator one has interest in, say R^2 or t values, for each bootstrapped sample. Running thousands of bootstrapped simulations of statistical estimators to capture the confidence region of the boundary values of unique textual data allows of evaluating the stability of estimators (Diaconis and Efron 1983). We created 20,000 bootstrapped versions of each data set. One should be more confident in 20,000 results yielding real confidence intervals than in a single estimated interval. We now turn towards the corpuses of data.

Insert Tables 2 and 3 about here

2.3 Corpora: Fictions and others

“But first catch your hare”, goes Mrs. Glasse’s (2012) 1747 cookery book title *“First Catch your Hare: The Art of Cookery Made Plain and Easy”*, before cooking juggled hare! Our catch is a set of texts we expect to contain words of fear. We collate two bodies of texts, one of fearful stories to show the dictionary is a valid tool to gauge fear (Table 2), the other of Western leaders to trace fear in the West (Table 3).

To corroborate a dictionary, one uses novels and other stories with specific profiles the dictionary categories ought to uncover. For example, from Underhill’s theory (1911), Martindale (1978; also 1988) predicted inverted-U trends of the “Primary Process Content” of the “Regressive Imagery Dictionary” (RID for short) (1975) in different night journey stories. Using the same RID, West, Martindale, and Sutton-Smith (1985) predicted “Primary Process Content” would decline with age in children stories. To support the “Motive Dictionary” (Version 7.0, 26 June 2013, <https://blog.gdeltproject.org/hogenraads-motive-dictionaryavailable-in-gcam/>), Hogenraad (2003, 2005) applied McClelland’s theory of “imperial motivation pattern” to predict war in literary stories and real-life documents⁹ concerned with war and conflict. So did Wilson (2006) to support the “Body Type Dictionary” applied to a set of fictional fetish stories and to samples from mainstream

⁹ For example: United States Government Printing Office. “Events leading up to World War II. Chronological history of certain major international events leading up to and during World War II with the ostensible reasons advanced for their occurrence. 1931-1944”. Washington: United States Government Printing Office (1944), 373 pages, www.ibiblio.org/pha/events/index.html

romantic fiction. Fetish stories contain more “Barrier Imagery” than mainstream writing samples, as predicted by clinical theory.

We use novels and historical documents known to display specific profiles of fear, to bear out the dictionary into a “Fear Index” (Golding 1954; Orwell 1990; Shakespeare 1599-1602, 1623; Wells 2015). “*It was on a dreary night of November*”. Thus starts, on a rainy night of June 1816 in Geneva, the primal scene of Mary Shelley’s (2018) *Frankenstein* that later opened the fifth chapter of her novel (Sampson 2018). Also the opening of *The War of the Worlds* (Wells 2015, p. 1): “*No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man’s*”. In Shelley’s *Frankenstein* and the other fearful corpora of Table 2, we expect at least positive linear trends.

The Kennedy Tapes (May and Zelikow 1997) are conversations (Oct 16, 11:50 am to Oct 29, 10:10 am) held by President Kennedy’s Executive Committee (EXCOMM) during the Cuban Missile Crisis while the risk of war was at the top from the first days of the crisis. We analyzed this data set at the time (Hogenraad 2014) for the risk of war, using the “Motive Dictionary” (Hogenraad 2005, 2013), a computer-readable dictionary of affiliation (*nAff*) and power (*nPow*) words. McClelland (1975) motivational roots of conflicts rest on the gap between *nPow* and *nAff* words. By way of proof by contradiction (Popper’s falsifiability, 1963), as risk of war in the EXCOMM conversations decreased (Hogenraad 2014, Fig. 1), we gathered the “Fear Index” would follow suit.

The NATO-Crimea and Putin-Crimea corpora (Hogenraad 2016) are about the Ukrainian crisis and the following annexation of Crimea by the Russian Federation (NATO Secretary-General A. F. Rasmussen. All speeches; President V. Putin. All speeches). Details for President Putin are: 112 speeches over 11 months (Nov. 22, 2013 – Sep. 10, 2014), for NATO: 129 speeches over 10 months (Dec. 1, 2013 – Sep. 23, 2014). The risk of war that

drove the crisis (Hogenraad 2016, Figures 3 and 4) was increasing yet not significantly. We thought risk of war and fear of the pull of war would naturally cohabit in the Crimean affair, so fear would speed up in parallel on both sides.

The last document, an exception of sort, is the Breivik's ¹⁰ (2009) diary. Being both challenging and fearfully disturbing enough to leave no one indifferent, this short document intensified our curiosity. Uncertain about the angle of the trend the diary would take, we still took it in the test tube data sets anyway.

Insert Figs. 1 and 2 about here

2.4 Corpora: History of now

History-of-now concerns the real uncontrollable world and its constraints, or so they say. In a foreword to Raymond Aron's (2008, p. xi) memoirs, Henry Kissinger remarked "*The philosopher deals with truths; the statesman addresses contingencies. The thinker has the duty to define what is right; the policymaker must deal with what is attainable*". The farthest the history-of-now data set goes back is 2009 up to the early part of 2018.

Seven data sets comprise the corpora where we should uncover if, how and how much fear changed course in the West (Table 3). Speeches by Pope Francis (Pope Francis. All speeches ¹¹), Archbishop Justin Welby (Archbishop J. Welby. All speeches ¹²), and President Peter Maurer, International Committee of the Red Cross (ICRC) (President P. Maurer. All speeches) compose the group of humanitarian leaders. President Tusk (President D. Tusk. All speeches), President Draghi, European Central Bank (ECB) (President M. Draghi. All

¹⁰ Norwegian far-right terrorist responsible for the 2011 Utøya attack that killed 69 people.

¹¹ Speeches only, excluding edicts, homilies, letters, and other verbal data.

¹² Speeches only, excluding sermons, articles, and books.

speeches), the Global Trade Alert agency (GTA) (Global Trade Alert. All executive summaries), and President Putin (President V. Putin. Major statements) form the European political and financial group. The GTA is an independent charity institution coordinated by the Centre for Economic Policy Research (London), an academic and policy research think-tank. This institution collaborates with research agencies around the world to identify harmful trading state measures (<https://www.globaltradealert.org/about>). The data we collated are executive summaries of technical reports on protectionist breaches to free trade.

Insert Table 4 about here

3 Results

3.1 The “Fear Index” in literary texts and archives (Table 4)

This pilot section concerns literary texts and archives: Barrie’s (1995) *Peter Pan*, Golding’s (1954) *Lord of the Flies*, Wells’ (2015) *War of the World*, Orwell’s (1990) 1984, Shelley’s (2018) *Frankenstein*, Shakespeare’s (1602) *Hamlet*, Shakespeare’s (1623) *Macbeth*, May and Zelikow’s (1997) *The Kennedy Tapes*, NATO’s (2014) *All Speeches*, President Putin’s (2014) *All Speeches*, and Breivik’s (2009) *Anders Behring Breivik Comments at Document.No*. We estimated regression models, assessing the fear with time, testing both linear and quadratic models. The hypothesis was an increase in the “Fear Index” over time. While we tested not only the linear time effect but also higher-order effects as well, in most cases, no effects greater than the linear did emerge.

We correctly thought linear increases of the “Fear Index” for the seven fearful novels and dramas, not significant for Barrie’s *Peter Pan* and Orwell’s 1984. About Barrie’s (1995) *Peter Pan*, Frazier (2014 p. 2) comments on the paradox of the little boy battling “*fear and*

desire towards the idea of growing up”: Fear and want check each other. The only quadratic time effect emerged in Golding’s (1954) *Lord of the Flies*, as a sequence of raising then abated fear.

Fright and pain are the most transitory of emotions. So wrote Richard Byrd (2015 reprint, p. 127) about his 1938 polar adventure. Fig. 2 (Shelley’s *Frankenstein*) illustrates typical ups and downs ¹³ of fear: When we think it is gone, it comes back. Threat being over, fear may return weeks, months or years later, after the storm. In *Lady Chatterley’s Lover*, Lawrence (1946, p. 43) gave a literary expression to the alternations: “*And when we think we have recovered and forgotten, it is then that the terrible aftereffects have to be encountered at their worst*”.

We expected and found the Kennedy Tapes to display the linear decrease of fear over the 13 days of the Cuban Missile Crisis as the risk of war was decreasing too (Hogenraad 2014, Fig. 1). Between ‘risk of war’ and the “Fear Index”, $r = .76$, $p < .005$, $n = 11$, r CIs 95% [.25/.97].

The NATO/Crimea and Putin/Crimea data sets both display linear increases of the “Fear Index”. For NATO, between ‘risk of war’ and the “Fear Index”, $r = .52$, $p < .005$, $n = 28$, r CIs 95% [.08/.81]. Fear increases too in Putin/Crimea, with $r = .76$, $p < .001$, $n = 30$, r CIs 95% [.50/.91] between ‘risk of war’ and the “Fear Index”.

The Breivik’s Diary reveals a fat negative decrease of the “Fear Index”. The ‘risk of war’ score is angling down too: $R^2 = .13$, $df(1, 40)$, $F = 5.9$, $p < .05$, $n = 42$, $\beta = -.09$, R^2 CIs 95% [-.17/-.02]; between the ‘risk of war’ and the “Fear Index”, $r = .56$, $p < .001$, $n = 42$, r CIs 95% [.24/.76]. About Breivik’s diary, ... we should have known. Is it a stretch to see indifference to fear as a feature of radicalization?

¹³ Thanks to Yves Bestgen (May 31, 2018) for having picked up the typical ups and downs of the “Fear Index” in Shelley’s *Frankenstein*.

Insert Figs. 3 to 5 and Table 5 about here

3.2 History-of-now (Table 5)

We were on the money about Pope Francis (Fig. 3), Archbishop Welby (Fig. 4), and the ICRC (Fig. 5): The “Fear Index” increased markedly, quadratic for Pope Francis, linear for Archbishop Welby and the ICRC. Surprise, we were wrong about President Tusk (Fig. 6), President Draghi (Fig. 7), and the GTA (Fig. 8): The “Fear Index” dropped linearly to its lowest levels ever. Enough to wrong-foot us and invite to catch the hidden meaning of these dual workings.

Putin’s mean “Fear Index” score is 4.6 without significant trend (Table 5). Note the Major Statements dataset analyzed here does not include day-to-day Presidential speeches where emotions may be more fitting. Remember the “Putin/Crimea” dataset (Nov. 2013-Sep. 2014) of Tables 2 and 4 does reveal temporary increasing fear scores. The selective memory behind-the-scene politics of the new Russia that Walker (2018) unraveled could account for fear being inaudible in the Major Statements. Disturbing too is that, along the Google Books Ngram Viewer (1800-2008), the word “*cmpax*”¹⁴ (‘fear’ in Russian) reaches its highest relative frequency in 2008 (no scores available after 2008).

Insert Figs. 6 to 8 about here

14

https://books.google.com/ngrams/graph?content=%D1%81%D1%82%D1%80%D0%B0%D1%85&year_start=1800&year_end=2000&corpus=12&smoothing=3&share=&direct_url=t1%3B%2C%D1%81%D1%82%D1%80%D0%B0%D1%85%3B%2Cc0

4 Discussion. Fear unbound and the crack in the West: A small theory

This study elicits four remarks. First, Muhammad and Turney (2010, 2013) have innovated in ways to develop lexical databases. Second, the “Fear Index” is valid to gauge fear. Third, the trends of the index are visibly present across the history-of-now data sets. The highest average rate (6.73) is in the ICRC, the lowest (3.87) in the ECB. Increasing fear rates in humanitarian leaders contrast with protracted decreasing rates in European spheres. Humanitarian leaders may not necessarily feel the fear of others exactly, but being translators for those who cannot speak, they may feel for their fear and make it audible. EU leaders, they, ignore fear, making a virtue out of blindsided insouciance (unlikely), or short-mindedness (even more unlikely), or contrivance (possible) as a version of Shklar’s “*fear of fear*” (1984 p. 237), that is, at the risk of displeasing, avoidance by letting things unspoken. In their first chapter ‘Confidence and their multipliers’, Akerlof and Shiller (2009, pp. 11-18) evoke Franklin Roosevelt’s words about the Great Depression “*The only fear we have to fear is fear itself*”. Crisis communication by avoidance sends the message “All things are fine, my fair Lady” –which contradicts daily realism anyway¹⁵. Yet, European fears exist, at least in disguise. Hartleb’s (2015) *A Thorn in the Side of European Elites* is about Euroscepticism, the “*general feeling of malaise towards the European project*” (abstract). Hartleb’s thorn is about the “*fear of Islam, immigration issues, promises of social improvement at the cost of minorities and foreigners*” (p. 13), the “*fear of a perfidious Franco-German conspiracy*” (p. 15), and the “*fear of a superstate EU*” (p. 16). The European Commission Public Opinion

¹⁵ The Google Books Ngram viewer (<https://books.google.com/ngrams>) displays mounting frequencies of usage for Plutchik’s emotions (joy, sadness, anger, fear, disgust, surprise, trust, anticipation).

front office ¹⁶ offers similar comments from polls. Fourth, the fault line between humanitarian leaders' words and fear-proof European' words, may blend into unfocused backwash, if then, from those feeling walled off and left out (Delumeau 1990). This is so whether the European decreases result from a spontaneous and uncontrolled move –blind spots-- or from some voluntary self-censorship, or just the same, amnesia, as the EU did of its colonial past (Pasture 2018). Rajan (2010, p. 24; also Kohler and Smith 2018) aligns with this scene, singling out the growing inequality of incomes as responsible for the 2008 financial crisis. Populism is the meaning of Rajan's (2010, p. 14) say "*Politicians ignore popular anxiety at their peril*" (see also Stiglitz 2016, pp. 297-299: "The postcrisis crises"). We try to leave the view that hidden or repressed fear is more powerful than unhidden one. Unhidden fear may complicate the vision of things, but arguing for complexity is intellectual fatigue.

At first glance, the results of the European spheres are counterintuitive –we expected European spheres to display increasing fear rates. But perhaps are we on to something else here. It is not so much that humanitarian leaders display higher levels of the "Fear Index" than political or economic ones: After all, of themselves these diverging "*force fields*" (James 1985, p. 231) make nothing happen. Being on a search for how fear in the West has changed – or hasn't— however fragmented was the survey, that search now moves to a new jarring step-change. Come to think about it, there is dissymmetry between the two spheres, a dissymmetry that creates meaning (Shubnikov and Koptsik 1974; Koptsik 1996). That is, contrary to the humanitarian spheres, the European ones, likely too President Putin, manage to avoid fear inasmuch as they are better equipped to evaluate risks (not fear per se, but threats that breed it). After all, evaluating dry actuarial risks (political, economic, financial, monetary) is part of

16

<http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/STANDARD/yearFrom/1974/surveyKy/2142>

their tasks. This view carries truth. More, the construction that emerges has insight in the sense of Goethe's (2016 poem "Vermächtnis", p. 429) formula "*Was fruchtbar ist, allein ist war*" [only what is fruitful is true]. From a few documentary facts brought to the surface, we foresee a construction that make sense ¹⁷.

Analyzing the words of fear is no substitute for a political or sociological analysis but makes it a little more difficult to pass by. What will happen next? Moored in evidence, we foretell none. We only put a finger on the spread of fear beyond the collapse of language that often accompanies societal crises. And did the next best thing, giving ones something they might use, a "Fear Index" and outcomes. Although these trends are not set in stone, how did we got there (Herzog 1997) and who is to do what with the knowledge we have of the present fact? When assemblies suspend a central feature as fear, the price to pay is what Baron-Cohen (2012, p. 4) terms "*empathy erosion*".

*"Fear is often good and must remain a guard seated
fast in the mind"* (Aeschylus 1977, [The Eumenides,
Chorus, 500-525].

¹⁷ We borrow the distinction between truth as historical fact and truth as something that makes sense, as well as Goethe's quotation, from Spence's (1982, p. 164) and Loch's (1977, p. 221) on creative interpretation and narrative truth.

References

- Aeschylus: The Oresteia (Agamemnon, The Libation Bearers, The Eumenides) (R. Fagles, Trans.). Penguin Books, London (1977). (Original work written before 458 BCE)
- Akerlof, G. A., Shiller, R. J.: (2009). *Animal Spirits: How Human Psychology Drives the Economy, and Why it Matters for Global Capitalism*. Princeton University Press, Princeton, NJ (2009)
- Aron, R.: *Memoirs: Fifty Years of Political Reflection*. Holmes & Meier Publishers, New York (2008)
- Bargh, J.: *Before you Know It: The Unconscious Reasons We Do What We Do*. William Heinemann, London (2017)
- Baron-Cohen, S.: *Zero Degrees of Empathy: A New Theory of Human Cruelty*. Penguin Books, London (2012)
- Bernard, J. R. L.: *The Macquarie Thesaurus: The National Thesaurus*. Macquarie Library, Sydney (2000)
- Boyd, R. L., Pennebaker, J. W.: Language-based personality: A new approach to personality in a digital world. *Curr. Opin. Behav. Sci.* 18, 63-68 (2017)
- Brants, T., Franz, A.: Web 1T 5-gram Version 1 LDC2006T13. Linguistic Data Consortium, Philadelphia (2006). <https://catalog.ldc.upenn.edu/ldc2006t13>. Accessed 11 January 2018
- Braudel, F.: *The Mediterranean: And the Mediterranean World in the Age of Philip II* (Volume II) (Siân Reynolds, Trans.). University of California Press, Berkeley (1996). (Original works published 1949 and again 1966 under the title of “La Méditerranée et le Monde Méditerranéen à l'Epoque de Philippe II”. Librairie Armand Colin, Paris (1966))

Burke, K.: A Grammar of Motives. University of California Press, Berkeley, CA. (1969).

(Original work published 1945)

Burleigh, M.: The Best Times, the Worst Times: A History of Now. Macmillan, London

(2017)

Byrd, R. E.: Alone. Palmer Press London (2015). (Original work published 1938)

Cambria, E., Das, D., Bandyopadhyay, S., Feraco, A. (eds.): A Practical Guide to Sentiment

Analysis. Springer, Berlin (2017)

Campbell, J.: Styron's voice. In: The Times Literary Supplement, January 15 2010, p. 3.

Times Literary Supplement Historical Archive [Web]. [https://www.the-](https://www.the-tls.co.uk/articles/private/styrons-voice/)

[tls.co.uk/articles/private/styrons-voice/](https://www.the-tls.co.uk/articles/private/styrons-voice/). Accessed 13 November 2017

Cohen, J.: The earth is round ($p < .05$). Am. Psychol., 49(12), 997-1003 (1994)

Davies, H.: Things hidden. In: The Times Literary Supplement, 9 October 2017.

<https://www.the-tls.co.uk/articles/public/things-hidden/>. Accessed 13 November 2017

Delumeau, J.: La Peur en Occident (XIVe - XVIIIe Siècles). Une Cité Assiégée [Fear in

Occident (XIV-XVIII Centuries. City under Siege]. Fayard, Paris (1978)

Delumeau, J.: Sin and Fear: The Emergence of the Western Guilt Culture, 13th-18th

Centuries. Palgrave Macmillan, Basingstoke (1990). (Original work published under the title "Le Pêché et la Peur: La Culpabilisation en Occident XIIIe-XVIIIe Siècles".

Fayard, Paris [1983])

de Montbrial, T.: Vivre le Temps des Troubles. Albin Michel, Paris (2017)

de Montbrial, T.: Living In Troubled Times. A New Political Era. World Scientific

Publishing, Singapore (2018)

Diaconis, P., Efron, B.: Computer-intensive methods in statistics. Scientific Am., 248(5), 96-

108 (1983)

Field, A., Miles, J., Field, Z.: *Discovering Statistics Using R*. Sage Publications, London (2012)

Frazier, K. E.: *The Peter Pan Paradox: A Discussion of the Light and Dark in J.M. Barrie's Shadow Child*. Undergraduate English Honors Thesis, University of Tennessee Honors Thesis Projects, Knoxville (2014).

http://trace.tennessee.edu/utk_chanhonoproj/1706 . <http://perma.cc/2UWR-HKHC> .

Accessed 27 January 2018

Freedom House: *Freedom in the World 2016. Anxious Dictators, Wavering Democracies: Global Freedom under Pressure*. Freedom House, Washington, DC (2017).

https://freedomhouse.org/sites/default/files/FH_FITW_Report_2016.pdf. Accessed 29 May 2018

Friedman, G.: *The Next 100 Years: A Forecast for the 21st Century*. Doubleday, New York (2009)

Friedman, T. L.: *Web People vs. Wall People*. The New York Times, p. A27 (July 27 2016)

https://www.nytimes.com/2016/07/27/opinion/web-people-vs-wall-people.html?_r=0, archived at <http://perma.cc/U8Q2-MVRM>. Accessed 11 November 2016

Glasse, H.: *First Catch Your Hare: The Art of Cookery Made Plain and Easy*. Prospect Books, London (2012). (Original work published 1747).

<http://www.telegraph.co.uk/foodanddrink/8860880/Getting-back-to-Mrs-Beeton-with-a-recipe-for-jugged-hare.html>, archived at <https://perma.cc/63KZ-E539>. Accessed 11 October 2017

Goethe, J. W.: *Gedichte: Ausgabe Letzter Hand 1827* [Poems: Last Supervised Edition 1827]. Hofenberg, Berlin (2016)

Goodman, N.: *Ways of Worldmaking*. Hackett Publishing Company, Indianapolis (1978)

Harris, R.: *The Fear Index*. Hutchinson, London (2011)

Hartleb, F.: A Thorn in the Side of European Elites: The New Euroscepticism. Centre for European Studies, Brussels (2015).

<http://martenscentre.eu/sites/default/files/publication-files/thorn-side-european-elites-new-euroscepticism.pdf>. Accessed 26 May 2018

Haselmayer, M., Jenny, M.: Sentiment analysis of political communication: Combining a dictionary approach with crowdcoding. *Qual. & Quant.* 51(6), 2623-2646 (2017)

Herzog, R.: Germany's future: Moving into the 21st century. In R. Herzog, *Lessons from the past, visions for the future*. German Issues, 18, 85-98. The Johns Hopkins University, American Institute for Contemporary German Studies, Washington, DC (1997).

<https://www.aicgs.org/site/wp-content/uploads/1998/06/Roman-Herzog-Speeches-German-Issues-18.pdf>. Accessed 24 May 2018

Hogenraad, R.: What the words of war can tell us about the risk of war. *Peace and Confl.: J. Peace Psychol.* 11(2), 137-151 (2005)

Hogenraad, R.: The fetish of archives. *Qual. & Quant.* 48(1), 425-437 (2014)

Hogenraad, R.: Deaf sentences over Ukraine: Mysticism versus ethics. *Digit. Scholarsh. Humanit.* 31(4), 725-745 (2016)

Hogenraad, R., Grosbois, T.: A history of threat in Europe and Belgium (1920-1993). *Soc. Indic. Res.* 42, 221-244 (1997)

Hogenraad, R., McKenzie, D. P., Péladeau, N.: Force and influence in content analysis: The production of new social knowledge. *Qual. & Quant.* 37(3), 221-238 (2003).

Hölderlin, F.: *Selected Poems and Fragments* (M. Hamburger, Trans.). Penguin Books, London (1998)

Hutton, R.: *The Witch: A History of Fear, From Ancient Times to the Present*. Yale University Press, New Haven (2017)

- James, W.: *The Varieties of Religious Experience: A Study in Human Nature* (M. E. Marty Ed.). Penguin Classics, London (1985). (Original work published 1902)
- Jameson, F.: *The Political Unconscious: Narrative as a Socially Symbolic Act*. Routledge, New York: (2002).
- Kershaw, I.: *Roller-Coaster: Europe, 1950-2017*. Penguin Books, London (2018)
- Kohler, T. A., Smith, M. E.: *Ten Thousand Years of Inequality: The Archaeology of Wealth Differences*. University of Arizona Press, Tucson (2018)
- Koptsik, A. V.: Creative power of dissymmetry in science and art and the principle of restoration of broken symmetry: informational-synergetic and structural-semiotic aspects. In: Ogawa, T., Miura, K., Masunari, T., Nagy, D. (eds.), *Katachi "U" Symmetry*, pp. 363-371. Springer-Verlag. Tokyo (1996)
- Lawrence, D. H.: *Lady Chatterley's Lover*. Penguin Books, New York (1946). (Original work published 1928)
- Loch, W.: Some comments on the subject of psychoanalysis and truth. In: Smith, J. H. (ed.), *Thought, Consciousness and Reality*, pp. 217-255. Yale University Press, New Haven (1977)
- Loughran, T., McDonald, B.: When is a liability not a liability? Textual analysis, dictionaries and 10-Ks. *J. Financ.*, 66(1), 35-66 (2011).
- https://provalisresearch.com/products/content-analysis-software/wordstat-dictionary/sentiment-dictionaries/?utm_source=Provalis+Research+Newsletter&utm_campaign=8234aa12f9- . Accessed 26 May 2018
- Macmillan, M.: The new year and the new populism. [Web]. Project Syndicate, 1 January 2017. <http://www.thedailystar.net/supplements/unforgettable-2016/the-new-year-and-the-new-populism-1338304>. Accessed 4 January, 2017

- Martindale, C. (ed.): *Psychological Approaches to the Study of Literary Narratives*. Helmut Buske Verlag, Hamburg (1988)
- McCann, S. J. H., Stewin, L. L.: Good and bad years: An index of American social, economic, and political threat (1920-1986). *J. Psych.*, 124, 601-617 (1990)
- McCann, S. J. H.: The extended American social, economic, and political threat index (1788-1992). *J. Psych.*, 132, 435-449 (1998)
- McClelland, D. C.: *Power: The Inner Experience*. Irvington Publishers, New York (1975)
- McClelland, D. C.: The avoidance motives. In: McClelland, D. C. (ed.) *Human Motivation*, pp. 373-412. Cambridge University Press, Cambridge (1987).
- Milanovic , B.: *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press, Cambridge (2016)
- Mohammad, S. M.: Challenges in sentiment analysis. In: Cambria, E., Das, D., Bandyopadhyay, S., Feraco A. (eds.) *A Practical Guide to Sentiment Analysis*, pp. 61-83). Springer, Berlin (2017). <http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>. Accessed 10 January 2018
- Mohammad, S. M., Turney, P.: Emotions evoked by common words and phrases: Using Mechanical Turk to create an emotion lexicon. Paper presented at the NAACL-HLT 2010 Workshop on Computational Approaches to Analysis and Generation of Emotion in Text, LA, CA (June 2010). <http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>. Accessed 11 January 2018
- Mohammad, S. M., Turney, P.: Crowdsourcing a word-emotion association lexicon. *Comput. Intel.* 29(3), 436-465 (2013). <https://arxiv.org/pdf/1308.6297.pdf>. Accessed 11 January 2018
- Moïsi, D.: *The Geopolitics of Emotion: How Cultures of Fear, Humiliation, and Hope are Reshaping the World*. Anchor Books, New York (2010)

Müller, J.-W.: What is Populism? University of Pennsylvania Press, Philadelphia (2016)

Nance, K.: Living in dangerous times. Chicago Tribune, pp. 1-3. (12 October 2012).

<http://www.chicagotribune.com/lifestyles/books/ct-prj-1014-don-delillo-20121012-story.html>. <https://perma.cc/VD24-ZRC7>. Accessed 18 November 2017

Pasture, P.: The EC/EU between the art of forgetting and the palimpsest of empire. Eur. Rev. 26(3), 545-581 (2018). <https://doi.org/10.1017/S1062798718000224>

Pavord, A.: The Tulip: The Story of the Flower That Has Made Men Mad. Bloomsbury, London (1999).

Péladeau, N.: Simstat for Windows. User's Guide (Version 1.21d, November 1997)

[Computer program]. Provalis Research, Montreal (1996).

<https://provalisresearch.com/products/simstat/>

Péladeau, N.: Sentiment Analysis with WordStat. Provalis Research (19 April 2018).

<https://provalisresearch.com/news-events/sentiment-analysis-dictionary/>. Accessed 26 May 2018

Plutchik, R.: The Psychology and Biology of Emotion. Longman, London (1994)

Popper, K. R.: Conjectures and Refutations: The Growth of Scientific Knowledge. Harper & Row, New York (1963)

Rajan, R. G.: Fault Lines: How Hidden Fractures Still Threaten the World Economy. Princeton University Press, Princeton (2010)

Sampson, F.: In Search of Mary Shelley: The Girl Who Wrote Frankenstein. Profile Books, London (2018)

Shalizi, C.: The bootstrap. Am. Sci. 98(3), 186-190 (2010)

Shklar, J. N.: The liberalism of fear. In: Rosenblum, N. L. (ed.) Liberalism and the Moral Life, pp. 21-39. Harvard University Press, Cambridge (1989)

- Shubnikov, A. V., Koptsik, V. A.: Symmetry in Science and Art (G. D. Archard, Trans.). Plenum Press, New York (1974)
- Siegel, E.: Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die. John Wiley & Sons, New York (2016)
- Spence, D. P.: Narrative Truth and Historical Truth. Meaning and Interpretation in Psychoanalysis. W. W. Norton, New York (1982)
- Stern, J. P.: The Heart of Europe: Essays on Literature and Ideology. Blackwell, Oxford (1992)
- Stiglitz, J. E.: The Great Divide: Unequal Societies and What We Can Do About Them. W. W. Norton & Company, New York (2016)
- Stone, P. J., Dunphy, D. C., Smith, M. S., Ogilvie, D. M.: The General Inquirer: A Computer Approach to Content Analysis. The M.I.T. Press, Cambridge (1966)
- Strapparava, C., Valitutti, A.: WordNet-Affect: An affective extension of WordNet. In: 4th International Conference on Language Resources and Evaluation (LREC-2004), Lisbon, January 2004.
- [https://www.researchgate.net/publication/254746105_WordNet-Affect an Affective Extension of WordNet](https://www.researchgate.net/publication/254746105_WordNet-Affect_an_Affective_Extension_of_WordNet) . Accessed 21 May 2018
- Tuchman, B. W.: A Distant Mirror: The Calamitous 14th Century. Ballantine Books, New York (1978)
- Walker, S.: The Long Hangover: Putin's New Russia and the Ghosts of the Past. Oxford University Press, New York (2018)
- Weber, M.: The Protestant Ethic and The Spirit of Capitalism (S. Kalberg, Trans.). Oxford University Press, London (2011). (Original work published 1905 under the title “Die Protestantische Ethik und der Geist des Kapitalismus“)

- Wilson, A.: Development and application of a content analysis dictionary for body boundary research. *Lit. Ling. Comp.* 21(1), 105-110 (2006)
- Young, L., Soroka, S.: Affective news: The automated coding of sentiment in political texts. *Polit. Comm.* 29, 205-231 (2012)
- Zola, E.: *La Débâcle* (Elinor Dorday, trans.). Oxford University Press, London (2017).
(Original work published 1892)
- Zweig, S.: *The World of Yesterday: An Autobiography*. The University of Nebraska Press, Lincoln, NE (1964). (Original work published posthumously 1943)

Table 1

The “Fear Index” (Version 1.0, 12 January 2018)

Tag	N. entries	Examples
Fear	1483	
Anger	698	Foe, glare, hostage, inferno, mob
Anticipation	159	Anxious, dread, foreboding, loom
Disgust	487	Appalling, debauchery, pestilence
Joy	50	Confidence, intimately, thrill
Negative	1236	Armaments, avoid, cabal, doom
Positive	99	Cautious, indomitable, repent
Sadness	656	Danger, debacle, hopeless, pain
Surprise	188	Detonate, fright, urgency, veer,
Trust	82	Hospital, mate, obey, rule,

Note 1. The Fear Sentiment Dictionary is a subset of the Saif Mohammad EmoLex

(<http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>)

(NRCC-National Research Council Canada), freely available for scientific research purposes.

Adapted to Hogenraad’s et al. PROTAN computer program.

Note 2. The 1,483 EmoLex entries are tagged in categories that are non-exclusive to one another. Entry “anxiety” for example is tagged in categories ‘fear’, ‘negative fear’, ‘anger’, and ‘anticipation’.

Table 2

Corpus: Validation of the “Fear Index”

Texts	Divisions	Total N. words	N. different words
Peter Pan (J. Barrie)	17 chapters	47,814	4,911
Lord of the Flies (W. Golding)	12 chapters	68,150	5,520
War of the Worlds (H. G. Wells)	27 chapters	60,373	6,847
1984 (G. Orwell)	24 chapters	100,323	8,914
Frankenstein (M. Shelley)	75 segments/1,000 words each)	75,278	7,254
Hamlet/MIT version	20 segments/1500 words each	30,020	4,564
Macbeth (W. Shakespeare)	28 segments (acts/scenes)	20,499	3,073
Kennedy Tapes (May & Zelikow)	11 days	200,533	7,081
NATO/Crimea	28 weeks	135,563	5,805
Putin/Crimea	30 weeks	193,713	8,917
Diary (A. B. Breivik)	42 segments (days/hours)	15,675	3,001
Total		947,941	

Table 3

Corpus: History of now

Texts	Divisions	Total N. words	N. different words
Pope Francis (IT)	864 speeches / 58 months (Mar. 13, 2013-Jan. 29, 2018)	1,085,893	22,292
Archbishop J. Welby (UK)	43 speeches / 19 months (May 20, 2015- Apr.12, 2018)	93,338	8,192
ICRC	89 speeches / 27 months (Feb. 18, 2015-Apr. 23, 2018)	88,755	7,029
Pres. D. Tusk (EU Council)	375 speeches / 37 months (Dec. 1, 2014-Feb. 23, 2018)	213,314	9,007
ECB	157 speeches / 62 months (Dec. 1, 2011-Mar. 14, 2018)	320,633	9,855
GTA	22 exec. Summaries (Sep. 17, 2009-Dec. 12, 2017)	44,704	4,191
Pres. V. Putin (RU)	131 speeches /47 months (on major issues) (Jun. 21, 2012-Dec. 17, 2017)	426,786	13,213
Total		2,273,423	

Table 4

Statistical regressions of the “Fear Index”: Validation

Texts	R^2	df	F	β	R^2 CIs 95%
Peter Pan	.07	1,15	1.2 (<i>ns</i>)	.05	[.00/.58]
Lord of the Flies	.82	2,9	21.0***	.39	[.13/.78]
				-.02	[-.05/-.004]
War of the Worlds	.44	1,25	19.6***	.05	[.17/.70]
1984	.13	1,22	.09 (<i>ns</i>)	.03	[.00/.44]
Frankenstein	.29	1,73	30.1***	.03	[.14/.46]
Hamlet	.25	1,18	6.1*	.08	[.01/.58]
Macbeth	.20	1,26	6.7*	.07	[.003/.62]
Kennedy Tapes	.38	1,9	5.5*	-.15	[.05/.84]
NATO/Crimea	.15	1,26	4.5*	.03	[.001/.51]
Putin/Crimea	.21	1,28	7.4**	.04	[.01/.48]
Breivik’s Diary	.30	1,40	17.1***	-.10	[.10/.53]

* $p < .05$; ** $p < .01$; *** $p < .001$

Note 1. In the “Fear Index”, ‘negative fear’ (Table 3) is the dominant component. When unwanted category ‘Fear-positive’ (such as awe, respect) is excessively present in a text, we remove it from key category ‘Fear-negative’.

Note 2. R^2 CIs 95% β confidence intervals are based on 20,000 resamplings. Residual plots showed regression models appropriate (Field et al. 2012, pp. 294-298). No outliers.

Table 5

Statistical regressions of the “Fear Index”: History of now

Texts	R^2	df	F	β	R^2 CIs 95%
Pope Francis	.31	2,55	12.30***	.33 .07	[.13/.53] [.03/.11]
Archbishop Welby	.21	1,17	4.5*	.08	[.014/.149]
ICRC	.16	1,25	4.8*	.04	[.005/.46]
Pres. Tusk (EU Council)	.27	1,35	13.1***	-.03	[.08/.51]
ECB	.15	1,60	10.7***	-.01	[.03/.32]
GTA	.26	1,20	7.0**	-.06	[.05/.58]
Pres. Putin	.02	1,45	1.1 (<i>ns</i>)	.01	[.00/.19]

* $p < .05$; ** $p < .01$; *** $p < .001$

Note 1. In the “Fear Index”, ‘negative fear’ (Table 3) is the dominant component. When unwanted category ‘Fear-positive’ (such as awe, respect) is excessively present in a text, we remove it from key category ‘Fear-negative’.

Note 2. R^2 CIs 95% confidence intervals are based on 20,000 resamplings. Residual plots showed regression models appropriate (Field et al. 2012, pp. 294-298). No outliers.

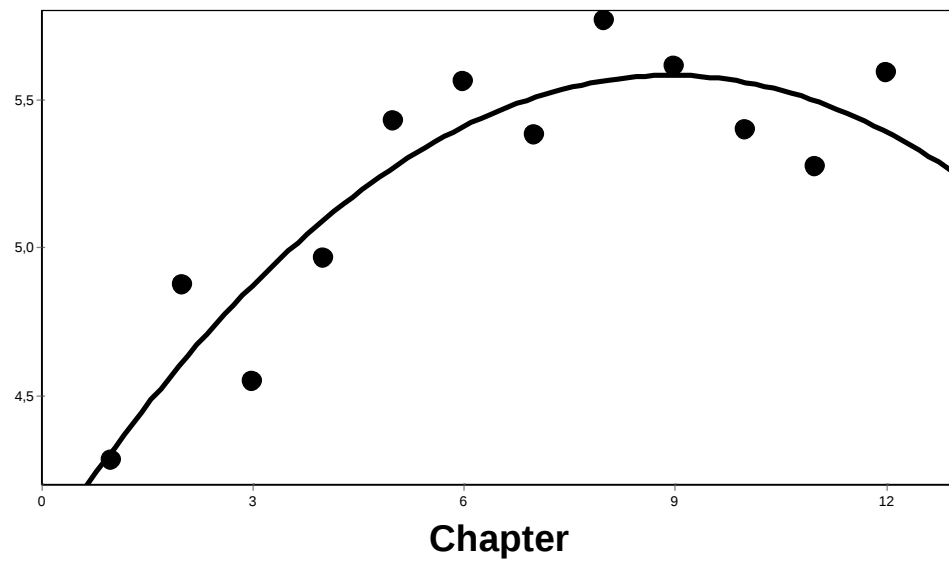


Fig. 1 “Fear Index” (left axis) in W. Golding “Lord of the Flies” (12 chapters, bottom axis)
(Table 4)

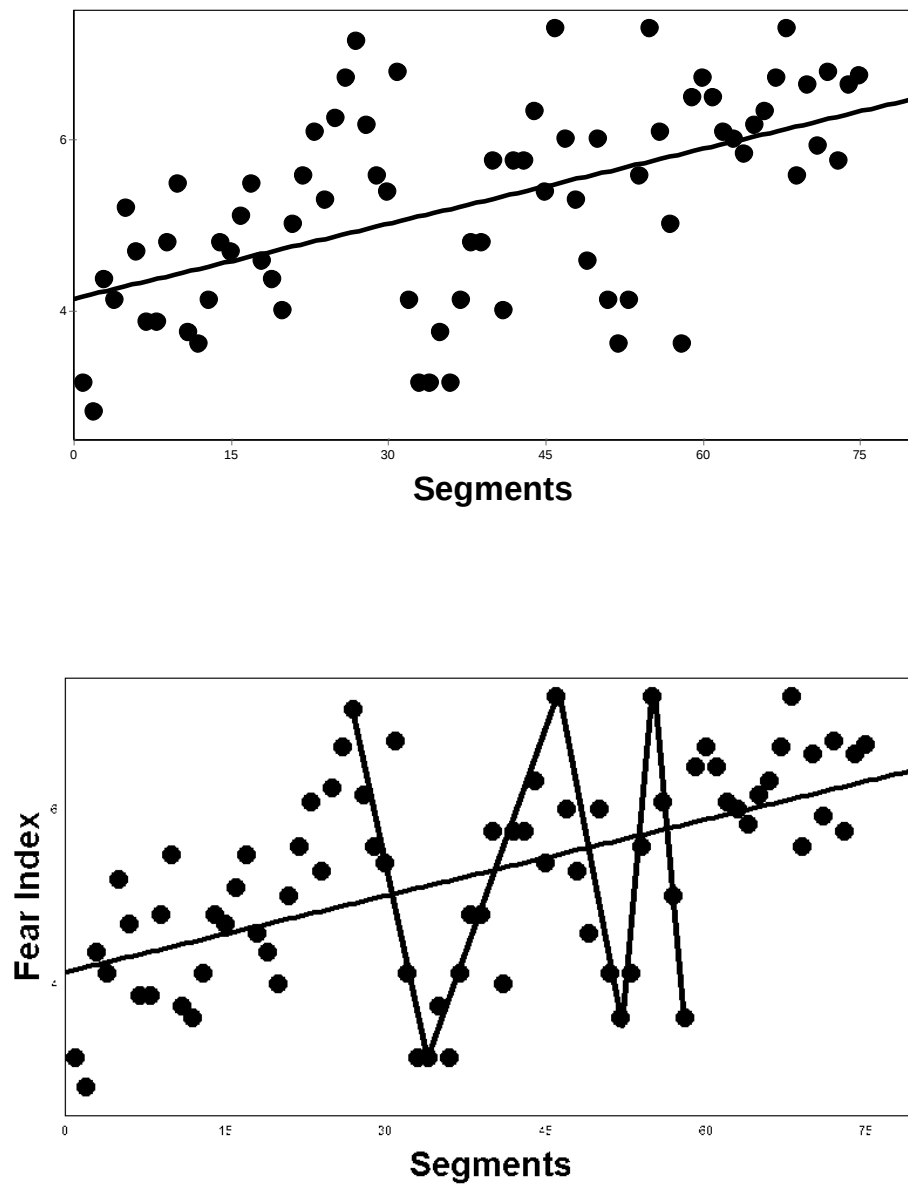


Fig. 2 “Fear Index” (left axis) in M. Shelley “Frankenstein” (75 segments, bottom axis) (Table 4). Ups and downs of the “Fear Index” emphasized in lower part

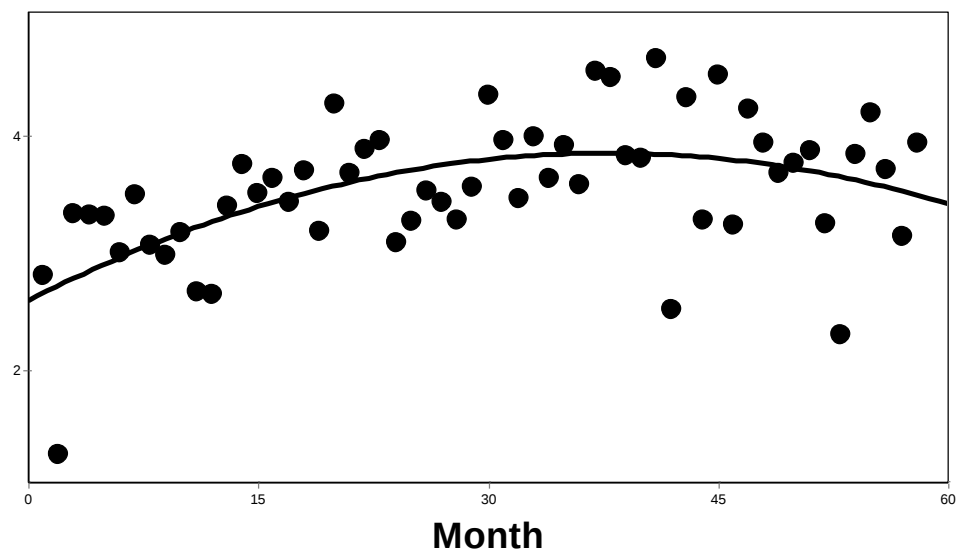


Fig. 3 “Fear Index” (left axis) in Pope Francis’ speeches (March 13, 2013 – January 29, 2018 – 58 months, bottom axis) (Table 5)

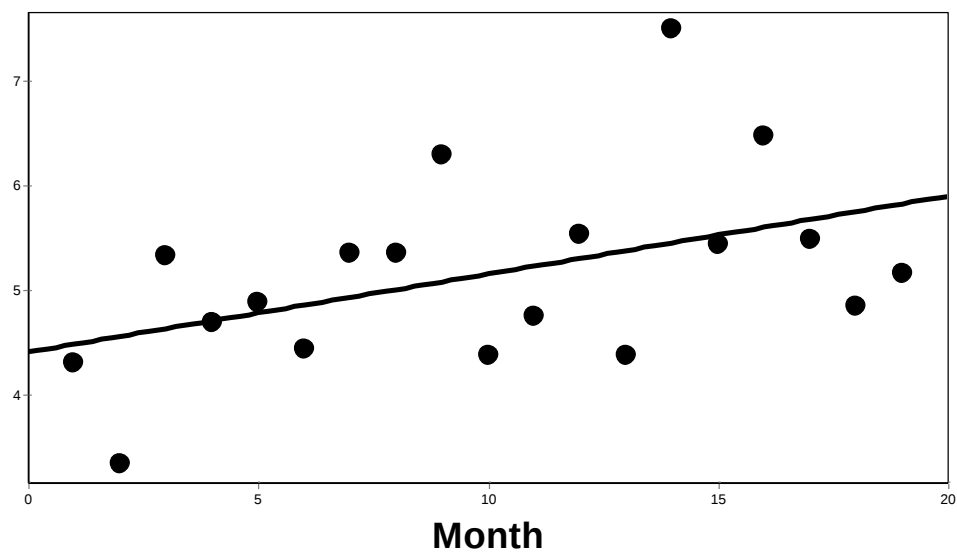


Fig. 4 “Fear Index” (left axis) in Archbishop J. Welby’s speeches (May 20, 2015 – April 12, 2018 -- 19 months, bottom axis) (Table 5)

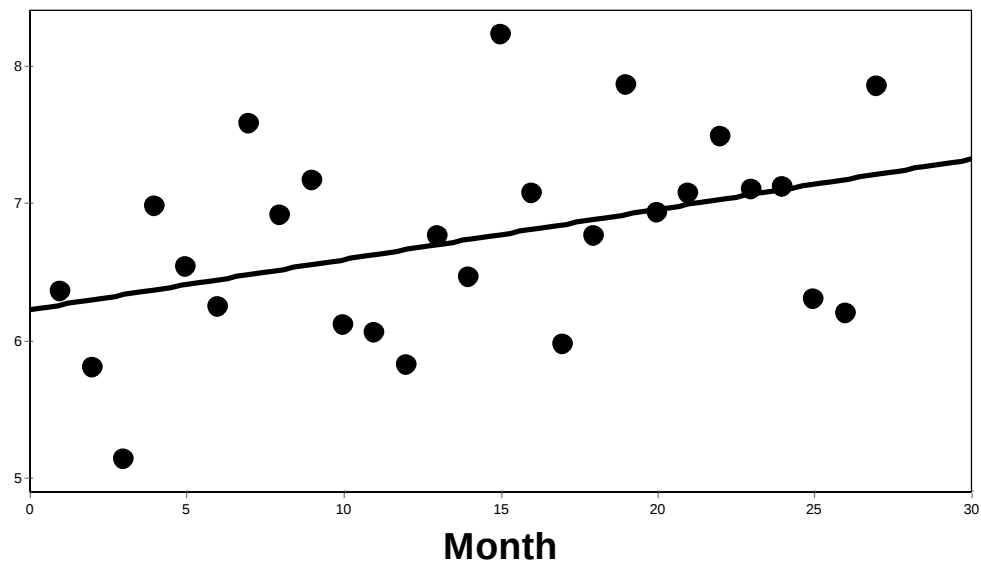


Fig. 5 “Fear Index” (left axis) in ICRC speeches (February 18, 2015 – April 23, 2018 -- 27 months, bottom axis) (Table 5)

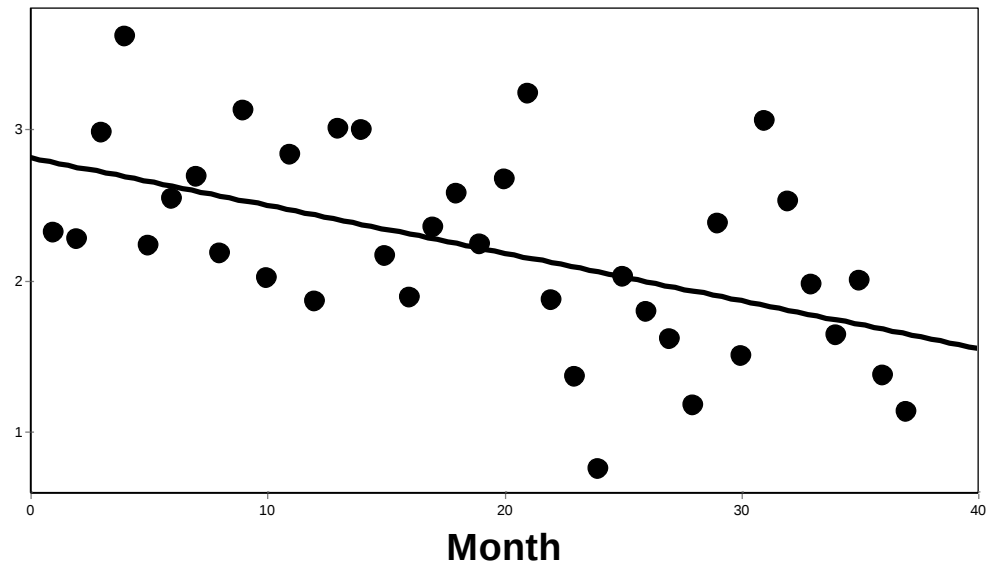


Fig. 6 “Fear Index” (left axis) in President D. Tusk’s speeches (December 1, 2014 – February 23, 2018 -- 37 months, bottom axis) (Table 5)

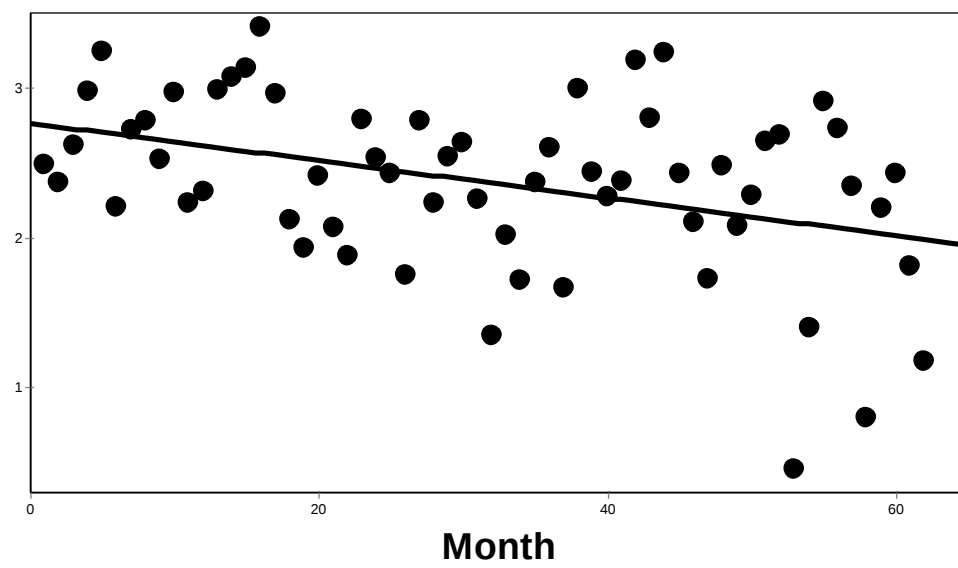


Fig. 7 “Fear Index” (left axis) in ECB speeches (December 1, 2011 – March 14, 2018 -- 62 months, bottom axis) (Table 5)

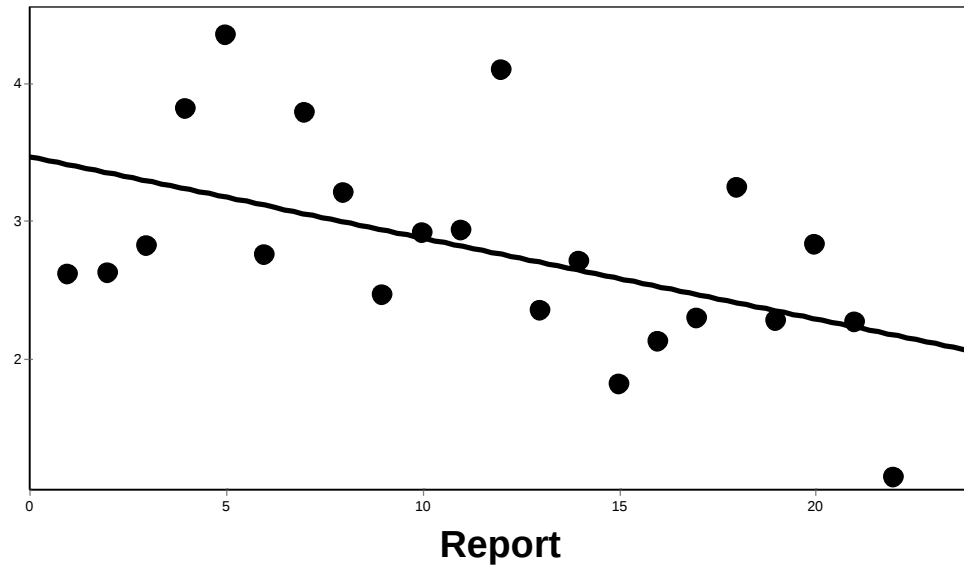


Fig. 8 “Fear Index” (left axis) in GTA executive summaries (September 17, 2009 – December 12, 2017 -- 22 summaries, bottom axis) (Table 5)

Appendices: Data files

Appendix 1. Corpus of validation

Barrie, J. M.: Peter Pan. Penguin Books, London (1995). (First published in novel form 1911). <https://www.gutenberg.org/files/16/>. Accessed 26 January 2018

Breivik, A. B.: Anders Behring Breivik Comments at Document.No. (2009). The Breivik Archives, <https://sites.google.com/site/breivikreport/documents> . Accessed 21 February 2018

Golding, W.: Lord of the Flies. Faber and Faber, London (1954)

May, E. R., Zelikow, P. D. (eds.): The Kennedy Tapes: Inside the White House During the Cuban Missile Crisis. The Belknap Press of Harvard University Press, Cambridge, (1997)

NATO Secretary-General A. F. Rasmussen.: All Speeches. [Data file]. http://www.nato.int/cps/en/natolive/opinions.htm?query=Ukraine&date_from=01.11.2013&date_to=02.09.2014&sort=date:D:R:d1&start=120#. Accessed 21-29 September 2014

Orwell, G.: Nineteen Eighty-Four. Penguin, London (1990). (Original work published 1949). <http://www.planetebook.com/ebooks/1984.pdf>. Accessed 21 January, 2018

President V. Putin.: All Speeches. [Data file]. <http://eng.kremlin.ru>. Accessed August 22-September 15 2014

Shakespeare, W.: The Tragedy of Hamlet, Prince of Denmark (1599-1602). <http://shakespeare.mit.edu/hamlet/full.html>. Accessed 17 January 2018

Shakespeare, W.: Macbeth (1623). <https://www.nosweatshakespeare.com/shakespeares-plays/modern-macbeth/>. Accessed 22 March 2018

Shelley, M. (2018). *Frankenstein: The 1818 text*. Penguin Books, New York. (Original work published 1818). <https://www.gutenberg.org/files/84/84-h/84-h.htm> . Accessed 16 March 2018

Wells, H. G.: *The War of the Worlds*. Dover Publications, Mineola (2015). (Original work published 1898). <https://www.gutenberg.org/files/36/36-0.txt>. Accessed January 20, 2016

Appendix 2. Corpus: History of now

Archbishop J. Welby: All Speeches. [Data file].

<https://www.archbishopofcanterbury.org/node/464/speeches/speeches/15>. Accessed 13 April 2018

Global Trade Alert.: All Executive Summaries. [Data file].

<https://www.globaltradealert.org/reports>. Accessed 10-12 March 2018

Pope Francis: All Speeches. [Data file]. <http://w2.vatican.va/content/francesco/en.html>.

Accessed 7-20 February 2018

President M. Draghi: All Speeches. [Data file].

<https://www.ecb.europa.eu/press/key/speaker/pres/html/index.en.html>. Accessed 26 March 2018

President P. Maurer: All Speeches. [Data file]. [https://www.icrc.org/en/resource-](https://www.icrc.org/en/resource-centre/result?t=speeches)

[centre/result?t=speeches](https://www.icrc.org/en/resource-centre/result?t=speeches). Accessed 27-28 April 2018

President V. Putin: Major Statements. [Data file].

<http://en.kremlin.ru/events/president/transcripts/statements>. Accessed 24–28 February 2018

President D. Tusk: All speeches. [Data file]. [http://www.consilium.europa.eu/en/european-](http://www.consilium.europa.eu/en/european-council/president/speeches/)

[council/president/speeches/](http://www.consilium.europa.eu/en/european-council/president/speeches/). Accessed 1 February-3 March 2018

Acknowledgments

This study did not depend on any private or public grant. We report no conflict of interest relevant to this research. Thanks to Yves Bestgen (Department of Psychology, Université catholique de Louvain) from his opportune comments on the manuscript. Special mention to Dr. Saif M. Mohammad and Dr. Peter D. Turney (Ottawa, National Research Council Canada) for the fortunate EmoLex database available for noncommercial use. Normand Péladeau (Provalis Research, Montreal, CA; <https://provalisresearch.com/>) related and suggested EmoLex and is associated to the present Fear Index project. Also to mention are generous exchanges with Dean McKenzie (Epworth HealthCare, Monash U., Melbourne). Two reviewers commented usefully on the first version of this paper. These persons and organizations did not play any part in funding, planning or designing this study.