

The words that predict the outbreak of wars

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Abstract

McClelland has shown how passionate reformist zeal for social justice is often the link between an “imperial motivation pattern” (i.e., high need for power and low need for affiliation) and subsequent wars. If we could predict the outbreak of past conflicts from observing the gap between affiliation and power in stories and documents of the past, we could also analyze documents of the present and point at the gap as a signal of alert of future conflicts. With the help of the new computer-readable MOTIVE DICTIONARY, I content analyzed literary stories and real-life documents concerned with war and conflict. The dictionary rests on three axes, which are: the need for achievement, the need for affiliation, and the need for power. Examples of such narratives and documents are William Golding’s “*Lord of the Flies*”, Thucydides’ “*History of the Peloponnesian War*”, Tolstoy’s “*War and Peace*”, a 373-page document produced in Washington in 1944 under the title of “*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*”, and Robert F. Kennedy’s “*Thirteen days: A memoir of the Cuban missile crisis*”. With close to impeccable precision, the gap between affiliation and power widens as the conflicts develop, with power higher than affiliation, and narrows if and when serenity resumes.

The words that predict the outbreak of wars

*“À l’homme qu’il fut autrefois”*¹ (To the man he used to be)

(Emile Verhaeren, 1915)

The thrust of this study is to derive a predictive model of wars using a computer-readable dictionary based on McClelland’s (1975) theory of motivation. The theory involves three basic needs, which are the need for achievement, the need for affiliation, and the need for power. Only the need for affiliation and the need for power are considered in the predictive model of wars. Intimacy, friendship, and positive emotional relationships with a person, as well as liking and wanting to be liked define the need for affiliation. The will to power, to have an impact on another person or to get or to keep control over people, forms the essential of the need for power. McClelland (1975, pp. 314-359) argues, and shows, how passionate reformist zeal for social justice –the use of one’s own accumulated power to save the others, whether they like it or not– is often the link between an “imperial motivation pattern” (i.e., the break created by high need for power and low need for affiliation) and subsequent wars.

Both McClelland (1975, especially chapter 9 “Love and power: The psychological basis of war”, pp. 314-359) and Winter (1993) have accumulated evidence in this sense. Winter had three series of documents rated by judges, British “Speeches from the Throne” from 1603 to 1988, diplomatic exchanges between Great Britain and Germany between July 24 and August 4, 1914, and government-to-government communications during the Cuban missile crisis (October 1962). In the “Speeches from the Throne”, the gap (power minus affiliation) is significantly higher during the periods that preceded wars –of which Great Britain has never been short– than during the years without war. Just before the outbreak of World War I, between July 24 and August 4, 1914, the gap (power minus affiliation) was similarly higher in the early days of the crisis than in the latter days. By contrast, the gap (power minus affiliation) decreased between the early days of the Cuban missile crisis and the latter days. But in the case of the Cuban crisis,

the war was avoided.

Using judges diminishes the validity of the results not a whit, quite to the contrary. The problem is that the rating procedure on which Winter's results are based limits the volume of data that can be analyzed, and the speed at which data can be analyzed. My purpose is to describe similar documents by entering McClelland's theory of motivation into a computer-readable dictionary and to formulate similar predictions. What is necessary to achieve this aim is a system of computer-aided content analysis, the motivation dictionary that goes with it, and appropriate texts about which one may devise hypotheses regarding the unfolding of the break between power and affiliation.

In stories that contain elements of survival or conflict –how affiliation and power take shape in hostile environments –, we should expect a widening of the gap between power and affiliation as the conflict develops. The gap should also widen in historical accounts and documents that report, in a literary way or not, real-life conflicts. At the opposite, in a case such as the Cuban missile crisis in which war was avoided, one should observe a closing of the imbalance between power and affiliation.

Method

Texts

The five texts together amount to 1,023,456 words (Table 1). Two of these instances ("*Lord of the Flies*" and "*Thirteen days: A memoir of the Cuban missile crisis*") are extensions of previous studies (Hogenraad, 2002, a and b). In the first text, the focus was on the coupling of affiliation and power under survival conditions and the eventual development of a conflict; in the second text, the focus was on the Cuban missile crisis itself. The present focus is on the widening of the gap between affiliation and power as indicator of the outbreak of wars.

"*Lord of the Flies*" is William Golding's best-known novel. It is the survival story of a

group of boys who, after a plane crash, set up a fragile community on an uninhabited island. At first, they enjoy the freedom of the situation but soon divide into fearsome gangs which turn the paradise island into a nightmare of fears and death. “*Lord of the Flies*” is composed of 12 chapters, accounting for 61,709 words, of which 5,520 are different words. Pruning declensions reduces the number of different words to 3,518. The novel was scanned for research purposes. The following extract from William Golding’s “*Lord of the flies*” illustrates the need for power, such as by gaining control over somebody else: “(Memories of the) knowledge that they had outwitted a living thing, imposed their will upon it” (1954, p. 74, underlining mine); the boys just succeeded to kill a wild pig on the island and enjoy their first experience of having a tangible impact on a hostile environment.

Thucydides’ “*History of the Peloponnesian War*” is composed of eight books and 26 chapters. The Athenian general Thucydides (circa 460-401BC) told the 27 years (431-404 BC) of war between Athens and Sparta as an eyewitness of the war. The first five chapters of his *History* account for Thucydides’ philosophy of history and war; they provide indications as to the premised causes of the war, which Thucydides imputes to the Spartan fear of the expanding power of the Athenian rival: “*The Lacedaemonians voted that the treaty had been broken, and that the war must be declared, not so much because they were persuaded by the arguments of the allies, as because they feared the growth of the power of the Athenians, seeing most of Hellas already subject to them*” (last sentence of chapter 3). Indeed, the word “*fear*” occurs 189 times over the 26 chapters. Thucydides’ *History* was downloaded from the collection of E-Books of the University of Adelaide Library <http://etext.library.adelaide.edu.au/t/t6/>.

Tolstoy’s (1828-1910) “*War and Peace*”, composed between 1863 and 1869, is made of 570,254 words and 365 chapters distributed over 17 books. This epic story chronicles the family life during the Napoleonic wars. “*War and Peace*” was downloaded from the project Gutenberg e-text wrnpc10.txt <http://promo.net/pg/>.

The “*Events leading up to World War II. 1931-1944*” (1944) is a commented chronology established by the Legislative Reference Service, under the heading of Sol Bloom, the then chairman of the Foreign Affairs Committee of the House of Representatives. As signaled in the foreword to the document, the chronology cannot pretend to be complete as such completeness must await the opening of government archives. Yet, the completeness of the archives is not a problem inasmuch as I am more interested in the narrative truth of the document than in its historical truth (Spence, 1982); the same remark applies to the other real-life documents. The chronology prior to December 7, 1941, was the work of Marle Klooz and Evelyn Wiley, under the general direction of Richard A. Humphrey. R. A. Humphrey and E. Wiley prepared the subsequent chronology. “*The events leading up to the outbreak of the war and the subsequent American entry into it are of an importance and interest so great that it is difficult to exaggerate. The chronicle of the inexorable march of aggression after 1931 and the failure of efforts to curb it illuminate the problems of a secure peace in the future as no mere formal argument or debate could ever do*” (extract from the foreword). The document concerns all the events around the world that led to the outbreak of World War II, and not only the ones involving Germany. The document examines as well the Japanese aggression in Manchuria in 1931 as the entry of the United States into the hostilities after Pearl Harbor in 1941. The document was downloaded from the public library and digital archives “*ibiblio*” <http://www.ibiblio.org/pha/events/index.html>.

The memoir “*Thirteen days: A memoir of the Cuban missile crisis*” is composed of 16,420 words, 2,253 different words, and 1,884 after pruning. Robert F. Kennedy’s memoir is the recount of a conflict that was avoided. As such, it can be contrasted with the other texts considered here. The conflict involved the United States and the Soviet Union; the latter had installed nuclear missiles in Cuba, just 90 miles off the coast of the United States. The memoir reports on events as experienced close from within by Robert Kennedy, not at a historian’s distance. The book (scanned) was divided into 32 arbitrary segments of 513 words each because

the 12 chapters of the memoir do not correspond to each day of the crisis.

Insert Table 1 about here

Content analysis

I assessed the gap between the need for power and the need for affiliation in the text with the help of the PROTAN content analysis system (Hogenraad, Daubies & Bestgen, 1995). Among other things, PROTAN allows one using a procedure of categorization for analyzing the content of a text. This procedure is based on semantic dictionaries, that is, lists of words that have been proved to assess a particular level of word meaning. Having selected a list of relevant words – such as a list of abstract words–, one compares all the words of the text to all the words of the list. A dictionary, in textual analysis, is no more than a list of words organized into categories, that is, words with a function in a hierarchical structure. When one applies a dictionary to a text, one looks for matches between a word in a dictionary and a word in a text, shoves the text words into the categories, counts the number of word matches in each category and takes the percentage of the number of word matches.

The MOTIVE DICTIONARY

The backbone of the MOTIVE DICTIONARY is made up of three components, which are the need for achievement, the need for affiliation, and the need for power. Several resources were exploited –with permission when necessary– to build up the dictionary: the GENERAL INQUIRER categories (version IV) (see the GENERAL INQUIRER home page <http://www.wjh.harvard.edu/~inquirer>) (Stone et al., 1966), to which were added some categories of the REGRESSIVE IMAGERY DICTIONARY (Martindale, 1975), some categories of the Lasswell value dictionary (Namenwirth & Weber, 1987; see also the GENERAL INQUIRER home page), and a few words from Heise's 1965 profiles that were missed from the main MOTIVE DICTIONARY.

Several words of these categories were modified or deleted, while other ones were added, so as to stay as close as possible to McClelland's theoretical frame of reference. Elias Canetti's (1960) "*Crowds and Power*" was also a useful resource for elaborating upon the power motivation categories. The MOTIVE DICTIONARY is designed so that any word assigned to one category cannot be present in another one except in its superordinate category. The present version 3.0 has 933 entries for achievement, 675 for affiliation, and 1,128 for power (Table 2).

Insert Table 2 about here

Auto-correlations and resampling

The general requirement in tests of statistical significance is that observations be independent of each other. However, words in a text are dependent, by the very nature of the text. These auto-correlations –correlations between observations– may grossly distort the level of significance in both parametric and non-parametric statistical tests. Even more critical for text analysis, auto-correlations may induce spurious correlations between variables. I removed systematically the auto-correlations between the observations up to the fifth degree using the procedure described in Hogenraad, McKenzie, and Martindale (1997).

Besides, the only way to generalize a result is to repeat it: having been proved right is not enough to be taken for granted. This is not possible in empirical studies of literature. A solution is to simulate repetitions. Data are always artificial, because they are always the products of a tool; it makes then little difference if we resample them artificially as well. I simulated the regression equations and the correlation data 20,000 times from the original data, using the SIMSTAT bootstrap algorithm (Hogenraad & McKenzie, 1999; Péladeau, 1996).

Results

“Lord of the Flies”

The correlation between power and affiliation is not significant in this narrative. However, as expected, the gap between power and affiliation exhibits a significant positive trend [$R^2 = .58$, $F(1, 10) = 14.0$, $p < .005$] (Table 3 and Figure 1). The simulation statistics are asterisked, as on the second line of the “*Lord of the Flies*” box in Table 3, at the right of the entry “gap (Pow-Aff)*”; the R^2 of .59 is the average R^2 computed from 2,000 resamplings.

The scale “rate of the gap” at the left of Figure 1 is negative, meaning that the power-minus-affiliation difference is negative: In this narrative, affiliation is higher than power, which partly reflects the feeling of loss of innocence—a longed for but missed friendship—that gives the novel its movingly humane quality. If power had been higher than affiliation, one can imagine that the story would have been nothing more than a second-rate gang fight. Jealousy between Ralph, the elected leader, and Jack, a silent contender at the beginning, perceptible from the start, comes out openly only around the sixth chapter, causing the group to split in the eighth chapter and to fight bitterly thereafter. The change is visible in Figure 1.

Insert Figure 1 and Table 3 about here

“History of the Peloponnesian War”

What we call the war of the Peloponnesians is in fact a 27-year series of wars interrupted by periods of relative peace or inactivity. The first five chapters of the “*History*” concern Thucydides’ philosophy of history and war; they were filtered out of the statistical analyses. Regression equations were computed on the remaining series. The initial regression analysis on the 21 chapters approaches statistical significance ($p < .07$), yet becomes significant after 2,000

resamplings (Figure 2 and Table 3). The analysis on the last 10 chapters is statistically significant [$R^2 = .73$, $F(1, 8) = 21.3$, $p < .005$]; this series concerns the so-called Sicilian war, which led to the final surrender of Athens in 404 BC. The size of the gap (between power and affiliation) in the initial series, from chapters 6 to 16, tends to increase, but the increase is sometimes interrupted by mixed events. For example, in chapter 10, the Athenians slaughtered so many Corcyrians that the news of the slaughter came in Athens as a shock that brought the war to a temporary halt. Paradoxically, the peace of Nicias (421 BC) –in chapter 15– was less a peace than an uninterrupted series of skirmishes while the Melian conference (416 BC) allowed the Melians to negotiate –in vain– with the Athenians (arrows in Figure 2).

Insert Figure 2 about here

“War and Peace”

The unfolding of the gap between power and affiliation in *“War and Peace”* is computed over the 17 books (Figure 3) while the correlations are computed over the 365 chapters. The gap between affiliation and power reflects more the decrease in affiliation ($R^2 = .13$, $F(1, 363) = 54.5$, $p < .0001$) than the increase in power [$R^2 = .02$, $F(1, 363) = 5.7$, $p < .05$]. The average rate of affiliation over the 365 chapters is 5.99, and 6.29 for power. The negative correlation $-.25$ ($p < .0001$, $n = 365$) between affiliation and power is stable after 20,000 resamplings.

Insert Figure 3 about here

“Events leading up to World War II. 1931-1944”

The correlation between power and affiliation in the *“Events leading up to World War II. 1931-1944”* is $-.74$ ($p < .005$, $n = 14$), and $-.71$ after 20,000 resamplings. The gap between power

and affiliation unfolds along an U-shaped profile [$R^2 = .92$, $F(2, 11) = 65.3$, $p < .00001$]; this is confirmed after 2,000 resamplings (Table 3 and Figure 4). In 1937, the lowest point in the series, things might have gone one way, or another way. After 1937, the pattern of the coming war was set. The entry of the United States into the hostilities on December 8, 1941, after Pearl Harbor, did only but increase the size of the gap.

Insert Figures 4 and 5 about here

“Thirteen days: A memoir of the Cuban missile crisis”

Of the five texts analyzed, Robert Kennedy’s memoir is the only one to exhibit a narrowing of the gap between affiliation and power [$R^2 = .24$, $F(1, 30) = 9.4$, $p < .005$], also after 2,000 resamplings (see Table 3 and Figure 5), but it is also the only one that concerns a war that was avoided. The decrease of the gap –already observed by Winter (1993, p. 540)– is due more to a decrease in the words of power than to an increase in those of intimacy [for affiliation, $R^2 = .09$, $F(1, 30) = 2.81$, ns, for power, $R^2 = .17$, $F(1, 30) = 6.2$, $p < .05$]. In other words, the motive at work may have been more a restraint in demonstrating one’s power than a need to express one’s love for each other. Also, the reduction of the tension is often interrupted, as for example in segment 23 when President Kennedy decided to increase the pressure, feeling that direct confrontation was inevitable (Figure 5). Other high values in Figure 5 mark moments of extreme tension among the President’s team. Thus in segment five, *“He [Secretary McNamara] argued that it [the blockade] was limited pressure, which could be increased as the circumstances warranted. Further, it was dramatic and forceful pressure, which would be understood yet, most importantly, still leave us in control of events (p. 34). (...) Those who argued for the military strike instead of a blockade pointed out that a blockade would not in fact remove the missiles and would not even stop the work from going ahead on the missile sites themselves (p.34). (...)*

The photography having indicated that the missiles were being directed at certain American cities, the estimate was that within a few minutes of their being fired eighty million Americans would be dead (p. 35). Segment 11 is similarly loaded with power concerns, such as gathering support from the Organization of the American States and the major European nations, while simultaneously putting U.S. troops on maximum alert. Yet, if the final confrontation was avoided –only just–, one sees in Figure 5 that, from the very beginning of the crisis, the major actors of the crisis, on both sides, invariably favored a strategy of graduated reduction of tensions over an invasion of Cuba and a direct confrontation between the United States and the Soviet Union.

Discussion and conclusion: Words that predict the outbreak of wars

There is little need to stack the results to fit the hypothesis. With close to impeccable precision, the thing that makes details fall into place is that the gap between affiliation and power widens as the conflicts develop, with power higher than affiliation, except in “*Lord of the Flies*”, and narrows if and when serenity resumes. The gap results from an increasing distancing between power and affiliation, even if the correlation between the two is not always statistically significant. Only in the Cuban missile crisis was the will to avoid confrontation present at the start; not so however in World War II, or in the earlier Napoleonic wars, nor in the Peloponnesian wars. Neither in William Golding’s novel. In each of these conflicts, except the Cuban crisis, a widening gap staged a “dynamite of the spirit” (Nietzsche, 2003, section 208) which any pretext could be made to explode. And did.

This study is but a fragmented view of war and one should not attempt to discover the whole in the part. It will be good enough if one can create a knowledge base of the metabolism of the outbreak of wars in texts and anticipate from their analysis crises that are getting out of hand. It would also be wrong to refer to the antisymmetric structure of wars as a description of the inner structure of the ideal system of wars. The gap, if it is confirmed in similar documents,

is not the cause of wars, but probably adds to the breeding ground that makes them more inevitable. Unable to prevent wars, social scientists may take solace in signaling impending ones, or the risks of such ones, although, on this, much depends also on the states' ability to evaluate the information received or their will to hear it. "*All I have is a voice*", wrote W. H. Auden in his "*September 1st, 1939*" poem. Indeed!

Note

1. In the book the Belgian poet Emile Verhaeren(1865-1916) wrote in 1915 about the German invasion of Belgium, the dedication (p. 10) reads: *“He who writes this book in which hate is not hidden was formerly a pacifist....For him no disillusionment was ever greater or more sudden. It struck him with such violence that he thought himself no longer the same man. And yet, as it seems to him that in this state of hatred his conscience becomes diminished, he dedicates these pages, with emotion, to the man he used to be”* (Barbara Tuchman’s translation, 1994, p. 310). The German invasion of neutral Belgium caused Verhaeren to change attitude in regards to his hopes for progress and his illusions of peace. Verhaeren’s crushed ideals reflected the world-wide feelings after the war.

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Table 1. Statistical summary of the corpus

Work	Divisions	Total number of words	Total number of different words
<i>“Lord of the Flies”</i>	12 chapters	61,709	5,520
<i>“History of the Peloponnesian War”</i>	26 chapters/ 8 books (431-404 BC)	204,948	9,653
<i>“War and Peace”</i>	365 chapters/ 17 books	570,254	18,094
<i>“Events leading up to World War II. 1931- 1944”</i>	14 years (1931-1944)	170,125	10,663
<i>“Thirteen days: A memoir of the Cuban missile crisis”</i>	13 days (16-28 October, 1962)	16,420	2,553
Grand total		1,023,456	

Table 2. Categories and subcategories of the MOTIVE DICTIONARY

Category	Subcategory	N. of words and roots	Examples
Achievement		933	
	Instrumental behavior*	207	labor, market
	Need**	50	craving, wish
	Goal**	36	aim, merit
	Try**	80	competitive, risk
	Means**	108	expedient, plan
	Persist**	46	constant, lasting
	Complete**	84	founder, success
	Finish**	42	erase, quit
	Means***	15	cost, equip
	Fail**	142	default, flounder
	Transaction gain***	44	accretion, boost
	Transactions***	78	install, release
Affiliation		675	
	Affection*	76	mate, sweetheart
	Social behavior*	74	answer, escort
	Affiliation**	378	accompany, courteous
	Affect loss***	24	alone, indifference
	Affect participants***	55	dad, mistress
	Affect words	40	family, nostalgic
	Positive affect***	29	affable, thoughtful

Power	1,128	
Power**	612	ambition, justice
Power gain***	29	emancipate, nominate
Power loss***	46	captive, weak
Power ends***	7	plead, recommend
Power conflicts***	151	adversary, invade
Power cooperation***	62	arbiter, reciprocal
Power authoritative	55	patriarch, detective
participants***		
Power ordinary	24	emissary, orator
participant***		
Power doctrine***	22	conservatism, dogmatic
Power authority***	23	legitimate, reign
Residual power words***	97	colonialism, terrorize

* subcategory of the RID; ** subcategory of the Harvard IV; *** Laswell category

Table 3. Summary results (* 20,000 resamplings)

Variable	n	R ²	F	df	p
<i>“Lord of the Flies”</i>					
gap (Pow-Aff)	12	.58	14.0	1, 10	<.005
gap (Pow-Aff)*	12	.59	linear: .12; ci 95% .10/.14		
r (Aff/Pow)	12	ns			
<i>“History of the Peloponnesian War”</i>					
gap (Pow-Aff)	21	.16	3.7	1, 19	<.10
gap (Pow-Aff)*	21	.17	linear: .07; ci 95% .03/.10		
gap (Pow-Aff) (Sicilian war, chapters 17-26)	10	.73	21.3	1, 8	<.005
gap (Pow-Aff) (chapters 17-26)*	10	.73	linear: .36; ci 95% .31/.41		
r (Pow/Aff) (chapters 17-26)	10	ns			
<i>“War and Peace”</i>					
gap (Pow-Aff)	17	.33	7.4	1, 15	<.05
gap (Pow-Aff)*	17	.33	linear: .05; ci 95% .03/.07		
r (Pow/Aff)	365	-.25	ci 95% -.34/-.15		<.0001
r (Pow/Aff)*	365	-.25	ci 95% -.35/-.15		

“Events leading up to World War II. 1931-1944”

gap (Pow-Aff)	14	.92	65.3	2, 11	<.0001
gap (Pow-Aff)*	14	.92	linear: -.69; ci 95% -.81/-.59		
			quadratic: .05; ci 95% .05/.06		
<i>r</i> (Aff/Pow)	14	-.74	ci 95% -.90/-.34		<.005
<i>r</i> (Aff/Pow)*	14	-.71	ci 95% -.92/-.16		

“Thirteen days: A memoir of the Cuban missile crisis”

gap (Pow-Aff)	32	.24	9.4	1, 30	<.005
gap (Pow-Aff)*	32	.25	linear: -.06; ci 95% -.09/-.03		
<i>r</i> (Aff/Pow)	32	ns			

Figure captions

Figure 1. Gap between the need for affiliation and the need for power (observed and fitted) in the 12 chapters of William Golding's novel "*Lord of the Flies*".

Figure 2. Gap between the need for affiliation and the need for power (observed and fitted) in Thucydides' "*History of the Peloponnesian War*" last 21 chapters (the five introductory chapters are not included into the statistical analysis).

Figure 3. Gap between the need for affiliation and the need for power (observed and fitted) in Tolstoy's "*War and Peace*".

Figure 4. Gap between the need for affiliation and the need for power (observed and fitted) in the document "*Events leading up to World War II 1931-1944*".

Figure 5. Gap between the need for affiliation and the need for power (observed and fitted) in "*Thirteen days: A memoir of the Cuban missile crisis*".

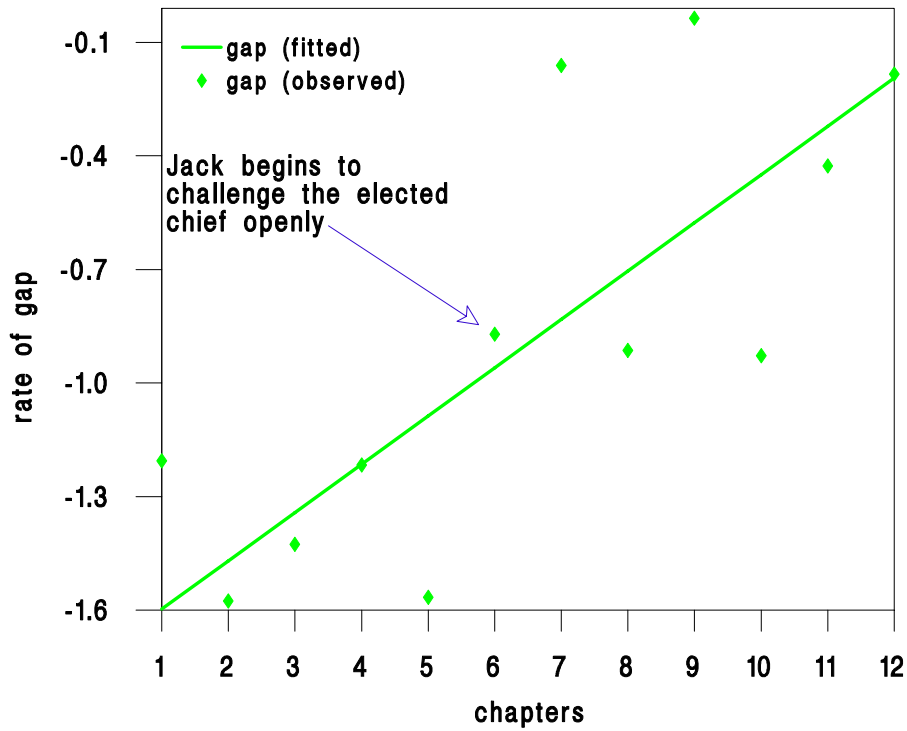


Figure 1. Gap between the need for affiliation and the need for power (observed and fitted) in the 12 chapters of William Golding’s novel “Lord of the Flies”.

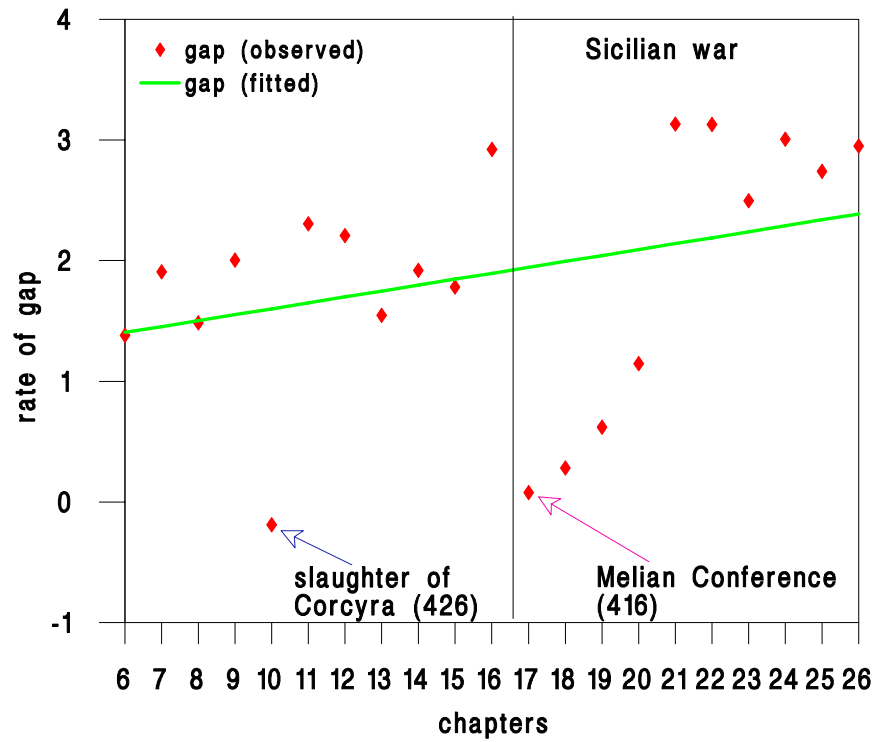


Figure 2 . Gap between the need for affiliation and the need for power (observed and fitted) in Thucydides’ “History of the Peloponnesian War” last 21 chapters (the five introductory chapters are not included into the statistical analysis).

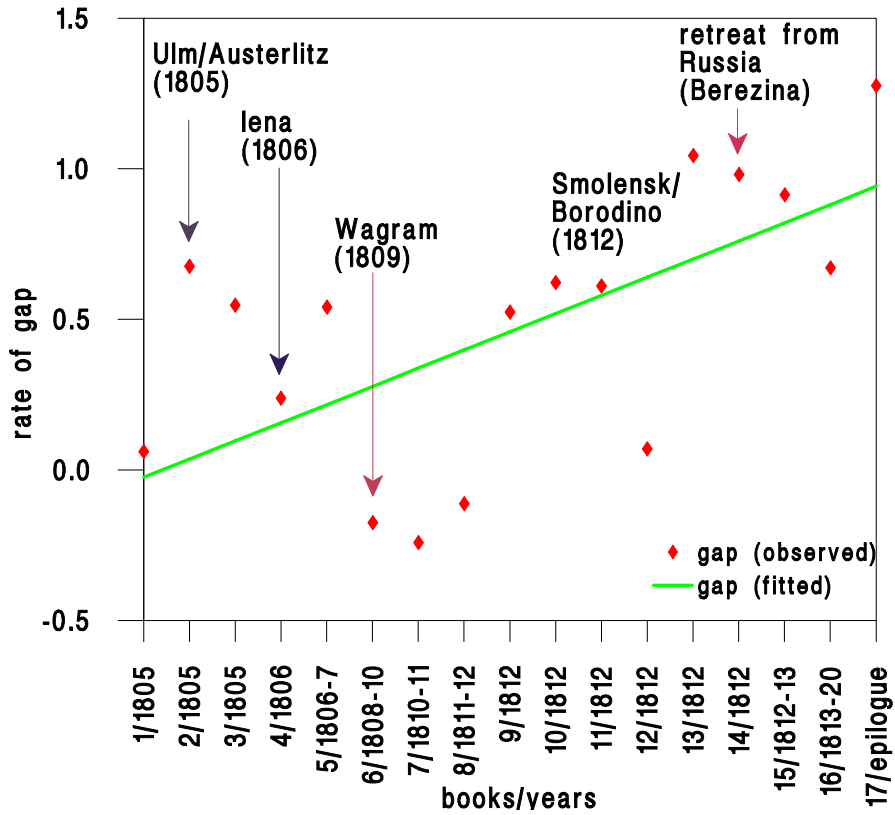


Figure 3. Gap between the need for affiliation and the need for power (observed and fitted) in Tolstoy's "War and Peace".

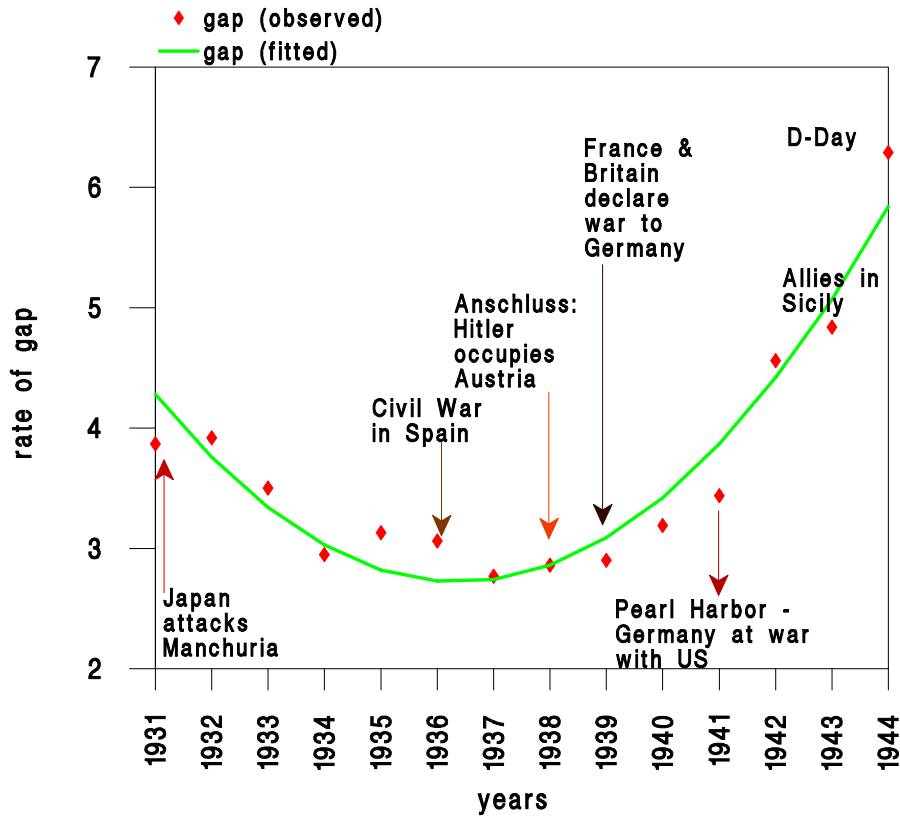


Figure 4. Gap between the need for affiliation and the need for power (observed and fitted) in the document “Events leading up to World War II 1931-1944”.

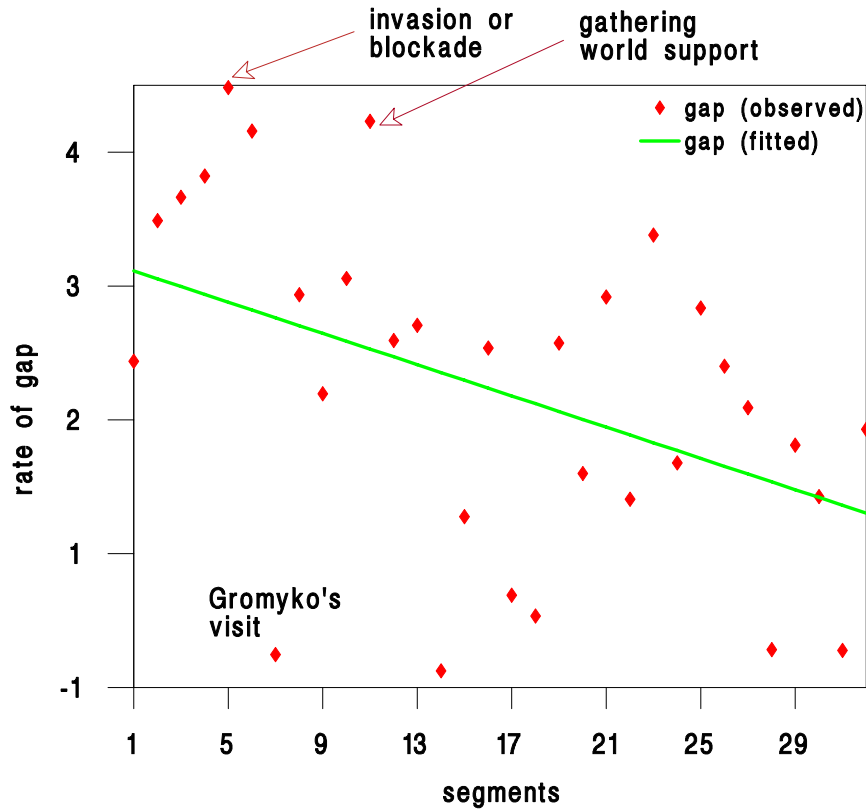


Figure 5. Gap between the need for affiliation and the need for power (observed and fitted) in “Thirteen days: A memoir of the Cuban missile crisis”.